

University of Cincinnati

Date: 3/9/2015

I, **Soojin Kim**, hereby submit this original work as part of the requirements for the degree of Master of Design in Design.

It is entitled:

Designing Fun-oriented Products: A Fun Product that Leads Pleasurable User Experience of The Cincy Red Bike

Student's name: **Soojin Kim**

This work and its defense approved by:

Committee chair: Gerald Michaud, M.A.

Committee member: Juan Islas Munoz, M.A.

Committee member: Heekyoung Jung, Ph.D.



14059

Designing Fun-oriented Products
A Fun Product that Leads Pleasurable User Experience
of The Cincy Red Bike

A thesis submitted to the
Graduate School
of the University of Cincinnati
in partial fulfillment of the requirements for the degree of

Master of Design

in the School of Design of the
College of Design, Architecture, Art and Planning
by

Soojin Kim

Committee Chair : Gerald Michaud

Committee Members : Heekyoung Jung

Juan Antonio Islas Muñoz

ABSTRACT

Seeking pleasure is an essential activity of human beings. **Pleasure** is achieved by satisfying human needs. According to Abraham Maslow, once people have satisfied a need, they need more and higher needs for better contentment. Increasing interests in human factors and emotion in product design considered pleasure as the highest value in a hierarchy of consumer needs in product experiences. This trend has led design researchers to study about designing pleasurable products. However, these studies do not explain how pleasure begins.

This thesis defines that the precursor to pleasure is **fun**. Fun is an activator that motivates people to take action in a product experience, potentially leading to long-term and deeper pleasure from that experience. Also, a developmental process from fun to pleasure was found. That process was translated into a diagram named **Funion**.

In order to demonstrate this hypothesis, the Cincy Red Bike, a bike sharing service in Cincinnati, particularly in uptown area where University of Cincinnati is located, was selected as a subject to test. Based on insights from empirical research about University of Cincinnati students who are the target user group and the Funion process, design strategies were established for designing a fun-oriented product for the Bike. A personified smartphone dock was designed called **Funamigo**. An associated service plan was also designed. Both were evaluated throughout an evaluation user test with UC students.

The test results show that a fun-oriented product for the Cincy Red Bike could motivate UC students to join and use the Cincy Red Bike membership. Moreover, Funamigo experiences encouraged them to sustain the membership with both fun and deeper pleasure even though there were limitations and concerns from respondents. Further design implications and future work are discussed in the end.

All Rights Reserved by Soojin Kim © 2015

ACKNOWLEDGMENT

***To my beloved parents, Hwan and Im,
whose love and support have led me today.***

And my advisors in the thesis committee, Professor Gerald Gerry Michaud, Professor Heekyoung Jung and Professor Juan Antonio Islas Muñoz. This thesis would not have been accomplished if it had not been for their support and valuable feedback.

Also, I appreciated all who shared their experiences in developing this thesis.

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGMENT	iii
LIST OF FIGURES	vi
LIST OF APPENDIX	viii
Chapter 1 INTRODUCTION	1
Chapter 2 WHAT IS PLEASURE?	5
2.1 Pleasure in philosophy	6
2.2 Pleasure in Psychology	6
2.2.1 Lewis' Classification of Pleasure	8
2.2.2 Csikszentmihalyi's "Flow"	8
2.2.3 Tiger's Framework of Pleasure	9
2.3 Pleasure in Product Experience	10
2.4 Why So Serious?	11
Chapter 3 FUN AS AN ACTIVATOR OF PLEASURE	13
3.1 Definition of Fun	13
3.2 Elements of Fun	16
3.3 Funion: A Process of Transforming Fun to Pleasure	21
Chapter 4 FUN PRODUCT FOR ENHANCING CINCY RED BIKE EXPERIENCE	23
4.1 The Cincy Red Bike	23
4.1.1 Current Situation in Overall and Opportunities of Improvement of Cincy Red Bike at University of Cincinnati	24
4.1.2 Rationale of Necessity of A Fun Product for Cincy Red Bike at University of Cincinnati	27
4.2 Empirical Research: What is Fun to UC Millennial?	28

4.2.1 Research Methods	29
4.2.2 Analysis and Results: UC Students' Fun	31
Chapter 5 DESIGN DEMONSTRATION: FUNAMIGO	36
5.1 Funamigo: A Personified Smartphone Docking System for Cincy Red Bike	36
5.2 Experience Design Strategy and Functional Requirements Based on Funion	37
5.3 Overview of Funamigo System and Functions	39
5.4 Design Demonstration	41
5.4.1 Overall Aesthetics of Funamigo	41
5.4.1.1 Form Evaluation Study	42
5.4.1.2 Design Refinement of Funamigo Device	45
5.4.2 Interaction of Funamigo	45
5.4.2.1 Product Interaction between Funamigo and A User ..	46
5.4.2.2 Mobile Application of Funamigo	47
5.5 User Scenario	48
5.6 User Test	50
5.6.1 Objective	50
5.6.2 Test Methods and Props	51
5.6.3 Limitation	51
5.6.4 Results and Analysis	52
Chapter 6 CONCLUSION	55
REFERENCE AND BIBLIOGRAPHY	57
APPENDIX	60

LIST OF FIGURES

Figure 01. Maslow's hierarchy of needs (1953)

Figure 02. Jordan's hierarchy of consumer needs

Figure 03. The dancing traffic light by Smart. Retrieved February 28, 2015, From:
https://www.youtube.com/watch?v=SB_ovRnkeOk/

Figure 04. Elements of Fun

Figure 05. An example of unexpectedness: Michelle Obama appearing in Funny or Die. Retrieved February 28, 2015, From:
<http://www.funnyordie.com/videos/f51b3917dd/snackpocalypse-with-Chloe-Grace-Moretz-Tyler-Posey-and-First-Lady-Michelle-Obama/>

Figure 06. An example of surprisingness: The world deepest bin. Retrieved February 28, 2015, From:
<http://www.thefuntheory.com/worlds-deepest-bin/>

Figure 07. An example of intensiveness, Retrieved February 28, 2015, From:
<http://1marticles.permalink-solutions.com/Weired/A-fight-club-on-the-top-of-the-world/>

Figure 08. An example of variety: Budduck. Retrieved February 28, 2015, From:
http://images-blogger-opensocial.googleusercontent.com/gadgets/proxy?url=Http%3A%2F%2F2.bp.blogspot.com%2F-VY7U_ZxsCB0%2FUcAE342KQDI%2FAAAAAAAAAAKo%2FbOf-AlC4AcU%2Fs1600%2FBud%2Bducks.jpg&container=blogger&gadget=a&rewriteMime=image%2F*

Figure 09. An example of expressiveness: Line characters. Retrieved February 28, 2015, From:
<http://www.strapya-world.com/pic/2013/237-299360img01.jpg/>

Figure 10. An example of novelty: Travel. Retrieved February 28, 2015, From:
<https://s-media-cache-ak0.pinimg.com/originals/7b/c3/2b/7bc32b02cef7b98f796ea9cb851cbecc.jpg>

Figure 11. An example of memorability: Radio Flyer wagon

Figure 12. The Funion: Development of emotional status throughout a fun product experience

Figure 13. The Cincy Red Bike photo by Liz Dufour, The Enquirer. Retrieved February 28, 2015, From:
<http://www.cincinnati.com/story/opinion/editorials/2014/10/04/cincinnati-bike-share/16712925/>

Figure 14. Features of the Red Bike. Retrieved February 28, 2015, From:
<http://www.cincyredbike.org/the-bike/>

Figure 15. Bearcats Bike Share of University of Cincinnati. Retrieved February 28, 2015, From:
http://www.uc.edu/af/pdc/sustainability/campus_initiatives/transportation/bike_share.html/

Figure 16. A paper tool of the draw it out method

Figure 17. A graffiti wall method carried out at University of Cincinnati

Figure 18. A picture of UC students' celebrating Halloween

Figure 19. Thomas and friends. Retrieved February 28, 2015, From:
<http://www.amazon.com/Take-Along-Thomas-Friends-Edward/dp/B0002HZ8DU/>

Figure 20. A diagram of design strategies corresponding to the Funion

Figure 21. A diagram of the overview of Funamigo system

Figure 22. A comparison between current membership plans and the suggested Funamigo plan

Figure 23. A form image scale for the form evaluation study

Figure 24. Questions of the form evaluation survey

Figure 25. Analysis of the form evaluation survey

Figure 26. A rendering image of Funamigo

Figure 28. Five selected personalities of Funamigo

Figure 29. A flow chart of Funamigo mobile application

Figure 30. User scenario

Figure 31. The first two participants smiling with Funamigo and the Cincy Red Bike

LIST OF APPENDIX

Appendix 1 Empirical Research Data

Appendix 2 The Workflow of Funamigo

Appendix 3 Funamigo Design Concept Sketches

Appendix 4 Form Evaluation Survey Form

Appendix 5 The Final Design of Funamigo

Appendix 6 The Final Design of Funamigo Mobile Application

Appendix 7 Funamigo Experience Evaluation Test Survey Form

Appendix 8 Funamigo Experience Evaluation Test Results and Analysis

Chapter 1

INTRODUCTION

Human beings seek for pleasure, which is positive and enjoyable mental states most humans and animals experience for their entire life. Feeling pleasure ranges from a simple activity that gets rid of pain such as thirst by drinking water, to mentally more profound engagement by overcoming a barrier to finally achieving a goal such as completing a marathon.

It corresponds to A. Maslow's hierarchy of needs. The theory claims that an individual desires the higher level needs when he or she met needs on the lower level. In the theory, physiological contentment pertains in the most basic level out of all the needs. This is related to one of attributes of pleasure that is fulfilled when primate pain is absent. When it is met, the individual aspires another needs. Showing creativity or solving a problem, on the other hand, enables the individual to eventually meet needs for self-actualization and self-esteem as well as to feel psychologically higher level of pleasure.

Industrialization fueled human beings to build the most flourishing world in human history. It is not difficult for people to fulfill the fundamental needs anymore, and desire the higher level of needs. When the needs are met, more pleasure is also aroused. Consumer behavior in modern society such as purchasing a service or a product that has more value other than its basic function and that even represents the individual self has a lot to do with feeling a deeper level of pleasure.

Design, allowing an individual to have more pleasurable experience both aesthetically and functionally, has gotten in the limelight by playing an important role in arousing positive emotion. As increasing interest on the power of pleasurable design, there have been many

design researches conducted relating to psychology of pleasure. Patrick W. Jordan et al interpreted several classification of pleasure from a design viewpoint.

However, the researches tend to explain pleasurable product based on its functionality or a partial aspect of pleasure from user experience with a product. These do not explain neither what triggers pleasurable experience through the product nor what motivates the user to use the product when excluding its functionality. This cannot support human behaviors that people are engaged in ludic activities, potentially leading a deeper meaning of pleasure. Huminga, a renowned psychologist by his theory, Homo Ludens, also pointed out that there is **something** in the beginning when humans feel pleasure and acknowledged the existence of **spark** in the brain.

Raising a curiosity on that, some design researchers argue that **fun is the spark**, and it is distinguished from pleasure by separating characteristics of fun from its of pleasure in their paper 'Funology'(2003). However, it focuses on fun of interaction design based on screen display rather than product design.

Donald Norman also explains about 'fun' in his book emotional design as one of elements with beauty and pleasure to produce enjoyment, a state of positive affect. According to him, fun is ignited by unexpected transformation with surprisingness and cleverness from aesthetics and functionality. And fun changes to pleasure when the product provides the user with a rich and complex experience while using and the pleasure makes people not only feel a strong affection on the product, but also satisfied with self-actualization by reflecting themselves.

Agreeing with his idea, this thesis claims that Fun is the spark and defined as an activator for people to be engaged in a product experience. Furthermore, it is to explore what attributes of fun keeps drawing emotional and behavioral feedback from a user so finally to make the user

feel pleasure from a simple spark.

In order to test this hypothesis, the Cincy Red bike, a bike sharing system in Cincinnati since 2014, were selected for students at University of Cincinnati as one of targeted user group and a subject of the research. There are several reasons. First of all, riding a bike is not just an activity, but an interaction between a bike and an individual. Secondly, its usage is lower in the campus area than in downtown though UC students are one of target groups. In this context, fun is more likely to be a motivation for them to use this service.

In summary, this research is to explore a way how fun is defined as a product experience as an activator to make people take action, what is its attribute, and how these elements leads people to enjoy long lasting pleasure with a product, not merely ending up with an attempt to kill time. The research process is divided to following four sections.

The second chapter is to explain background research of previous studies in psychology, and new studies of pleasure and fun in modern design fields.

Chapter three is to define fun in product experiences and to account for emotional development process from fun to pleasure throughout a relationship between a user and a product. The process is called Funion.

In chapter four, I introduced the subject of experiment of the thesis, Cincy Red bike, argued rationales of selecting the Red Bike as a subject and showed a process and insights from empirical user research about fun of University of Cincinnati students.

In chapter five, I demonstrated the hypothesis by designing a fun-oriented product. I created design strategies based on Funion and insights from the empirical research in chapter four. As a result, I designed Funamigo which is a smartphone dock on the Red Bike and a mobile

application service for the Cincy Red Bike and UC students. A user test was held at University of Cincinnati in order to demonstrate the product and hypothesis and the results are also articulated in this chapter.

In chapter six, I mentioned reflections from the research and opportunities for improvement for the next researches.

Chapter 2

WHAT IS PLEASURE?

Pleasure and fun are often considered as interchangeable words. However, I found that there is a slight, but big difference between these two meanings. In order to get the sense, understanding pleasure itself is necessary.

At the same time, richness of modern society makes people want more and more, and it allows design to have an important role to satisfy our desire both aesthetically and functionally. In this context, product designers have been aware of the importance of human factors in design that adds pleasurable appreciation beyond functionality, and design researchers and psychologists have considered the psychology of pleasure.

Maslow's hierarchy of needs (1954) also provides a crucial concept to rank humans' needs. To interpret the concept in the viewpoint of product design, pursuing pleasure associated with products in the contemporary world is one of the highest needs in the pyramid that people desire. This point allows design to exert the biggest influence since design is a powerful mean to create pleasurable aesthetics and experiences.

However, there is an open question. Do we say the word "pleasure" whenever we have enjoyable experience? Is pleasure derived from seeing a cool product the same kind of pleasure from appreciating an artwork? Is pleasure a proper expression for all enjoyments? And another question follows. Why should fun be distinguished from pleasure?

What Is Pleasure?

Pleasure is defined as ‘the condition of consciousness or sensation induced by the enjoyment or anticipation of what is felt or viewed as good or desirable; enjoyment, delight, gratification. The opposite of pain in The Oxford English Dictionary.

2.1 Pleasure in Philosophy

Epicurus, an ancient Greek philosopher, the founder of the school of philosophy called Epicureanism, defined pleasure as the chief good and pain as bad and evil. He argued that the highest pleasure is the lowest of suffering of pain, and pleasure itself as “freedom from pain in the body and freedom from turmoil in the soul”. (Letter to Menoeceus, Section 131-2). In his viewpoint, when an individual does not suffer pain, he or she is no longer in need of pleasure and finally is in a state of tranquility.

It is true that pleasure can be achieved by minimizing pain and aroused positive effects either physically or mentally. However, this theory explains the concept of pain ambiguously. Of course feeling pain is followed by desire for us to be free from the suffering situation but it does not apply at all the times.

2.2 Pleasure in Psychology

Pleasure in psychology is considered as one of the most critical and fundamental emotional requirements that make a human being continue his or her life. It has also had a lot to do with satisfaction of the needs of an individual. Maslow’s hierarchy of needs (1943) often

is linked to psychology of pleasure since when a need is met, it drives people to experience the pleasure of satisfaction. It also makes people want more and better needs. In his viewpoint, the higher level of needs that are met, the more pleasure we feel.

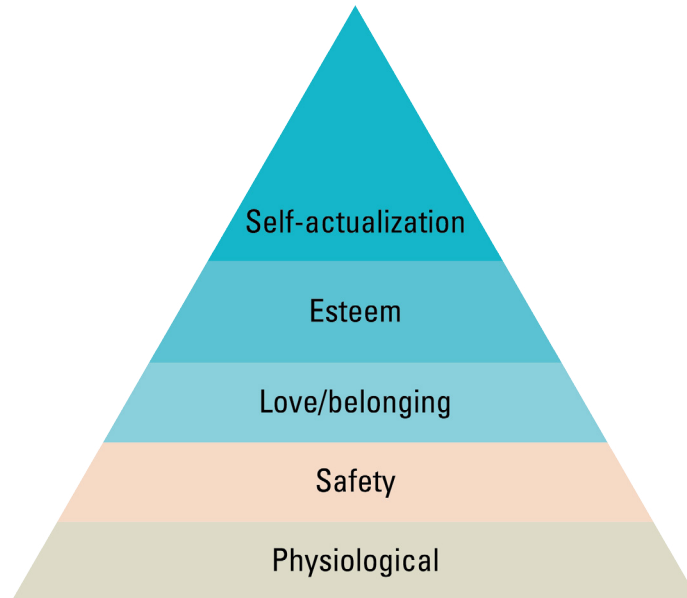


Figure 01. Maslow's hierarchy of needs (1953)

According to this pyramid, self-actualization and esteem place highest and love, safety and physiological needs are placed under the two. The two upper needs points a deeper meaning of pleasure from its appreciation; the others points to pleasure from satisfaction of requirements for life.

Three famous classifications of characteristics of pleasure by renowned psychologists are introduced. Also Co-interpretations with Maslow's needs theory are described below. These will help to understand the relationship between needs and pleasure as well as how pleasure is accomplished.

2.2.1 Lewis's Classification of Pleasure

C.S. Lewis (1987) classified pleasure as to need pleasures and pleasures of appreciation. Need pleasure is defined as those that can move a person from a state of discontentment to a state of contentment. For example, drinking water allows a person to quench the thirst. It relates to satisfaction of mostly physiological needs, safety needs or need for belonging.

On the other hand, pleasures of appreciation are defined as accumulation from a person's finding something pleasurable, no matter what the level of current contentment. Listening to music is an example of this category. This relates to satisfaction of the highest level of needs in pursuing pleasurable experience itself.

2.2.2 Csikszentmihalyi's "Flow"

Pleasure from the self-actualization is well explained by "Flow", which is a study named by Mihály Csikszentmihályi, (1975), a Hungarian psychologist. Flow is described as a mental state of engagement in which a person performing an activity is fully absorbed in a feeling of focus, full involvement, and deep enjoyment in the process of the activity. It is defined "a peak experience of total absorption in an activity"(Mark Blythe and Marc Hassenzahl, 2003). It is pleasure from accomplishment of a challenge beyond a limit. These experiences happen in non-leisure and serious contexts (e.g. designing a product). The important point is that feeling pleasure derives from a process, not just a fragmentary phenomenon.

2.2.3 Tiger's Framework of Pleasure

Lionel Tigers (1992), a Canadian anthropologist was renowned by his frameworks of pleasure. Design researchers who study pleasurable product design often cite his classification. These four classifications associated with Maslow's concept are briefly described below.

Physio-Pleasure

This is physical contentment derived from sensory organs. It happens in sensory level by touching, smelling, hearing and tasting something. Though it mostly corresponds to physiological needs in the pyramid of needs, it can be also related to the higher level in terms that sensory pleasure can be associated with esteem or self-actualization. Appreciating artworks is an example of it.

Socio-Pleasure

Socio-pleasure is derived from relationships with other people or society as a whole. Social need pleasures avoid discomfort of not being socially accepted. This is related to contentment of needs for belonging. For example, an individual feels comfortable and proud and behaves in a certain manner and has values depending on a community or a society where he or she belongs. In this context, It pertains both in the behavioral and in the reflective level.

Psycho-Pleasure

Psycho-pleasure is derived from people's cognitive and emotional reactions. This can be satisfied when expectation of an entity is met. For example, a user feels emotionally more satisfied and "cooler" in using a brand new laptop than in using a 5 years old laptop. This relates to self-esteem and self-actualization. Having a certain product can give the user confidence or

humiliation.

Ideo-Pleasure

Ideo-pleasure is connected to people's values, morality and aspirations. For instance, eating organic foods or using eco-friendly products allows a person to feel pleasure by realizing his or her values that he or she believes. This is related to contentment of self-actualization, or esteem. This provides much deeper level of pleasure on the mental state so it pertains in the reflective level.

2.3 Pleasure in Product Experience

Patrick W. Jordan, a British/American design consultant, insisted that pleasure-based approaches in designing a product enables designers not only to understand their users from a holistic viewpoint, but also to take advantages of attracting the users by evoking positive emotions about the product beyond usability (Patrick et al, 2002). He defined the approaches as pleasure with a product which is the emotionally enjoyable benefits associated with product use.

In order to support his argument from the design viewpoint, he referred to Lewis's definition of pleasure and Tiger's framework of pleasure of product experience. Jordan (2000) interpreted Lewis's distinction in product experiences as pleasure from the absence of pain versus pleasure derived from positive, joyful feeling. Moreover, he completed his theory by substituting product experiences into Tiger's pleasure definition.

He also used Maslow's theory to explain the point that when people get used to having something, they then start looking for something more. He claimed that pleasure pertains in the

highest level of consumer needs (2002)¹.

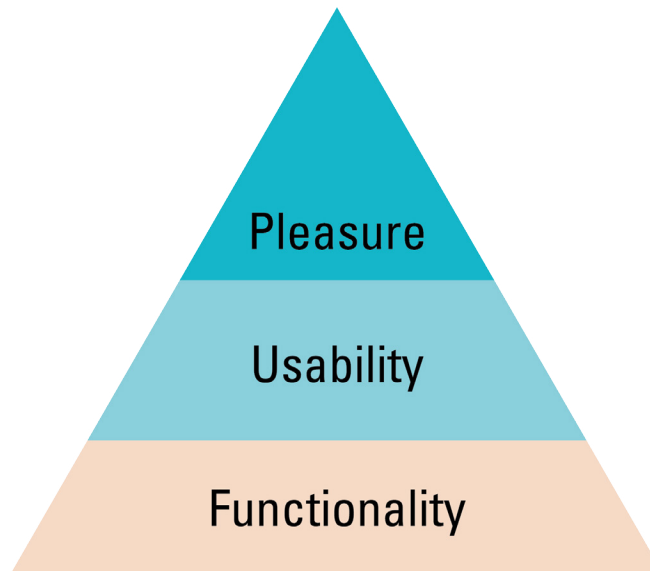


Figure 02. Jordan's hierarchy of consumer needs (2002)¹

Donald Norman also emphasized the power of pleasurable design in his book “Emotional Design” stating that “someone who is relaxed, happy, in a pleasant mood, is more creative, more able to overlook and cope with minor problems with a device -- especially if it’s fun to work with.” (Norman, 2004). His examples of human behaviors point out that people do not have a product only for purpose or usability, but for pleasure itself.

4.4 Why So Serious?

There is no doubt that humans seek pleasure. However, though there are many researches of serious pleasure and enjoyment as briefly listed above, there are few studies how pleasure is provoked in an unintended situation. Johan Huizinga, who emphasized pleasure as a

1.Green, William S., and Patrick W. Jordan, eds. Pleasure with products: Beyond usability. CRC Press, 2003.

fundamental instinct of humans, also stated that there are conditions necessary for pleasure to occur.

Also, pleasure is not always from satisfaction of a sense of accomplishment by challenging. Here is a quote by Csikszentmihalyi,

“Why do we choose to watch television over reading a challenging book, even when we know that our usual hedonic state during television is mild dysphoria while the book will produce flow?”

(Seligman and Csikszentmihalyi, 2000)

This argument implies that people are engaged in more superficial, shallow, short-term and volatile ‘pleasure’. Others questions follow; does a high level of appreciation pleasures such as seeing an artwork or listening to classical music no matter what make you smile? How can we explain the moment we laugh out? This cannot be explained well by those theories.

In summary, pleasure is a positive mental state of feeling enjoyment. Pleasure derives from contentment of needs as well as appreciation of pleasure itself. Increasing interests in human factors as well as updated cutting-edge technology allow designers and design researchers to consider pleasure as a key element in designing a product and let them conduct research associated with the psychology of pleasure. However, these do not account for how pleasure begins in a product experience.

CHAPTER 3

FUN AS THE ACTIVATOR OF PLEASURE

As pointed out in chapter 2, it has been discussed in design field that pleasure is the highest value in product experience as is increasing interests in the human factor of emotion. However, these theories do not specifically distinguish different kinds of pleasure in terms of emotion. We feel pleasure both by playing an instrument and by rolling a skateboard but it would not be the same kind of pleasure.

Moreover, people do not always feel pleasure in an intended situation and purposes. We are also motivated to start to do a ludic activity or use a product by chance and feel unexpected pleasure from them. In this context, there must exist something in the fore before a positive emotion transforms to pleasure. In this thesis, I argue that the thing is fun. Fun sparks in an instant in the first stage of a pleasurable experience but it is powerful enough to have people take action and feel trivial happiness.

This chapter proposes distinct characteristics of fun from pleasure, defines elements of fun in product experience and asserts that fun transforms to pleasure throughout a relationship between a product, its activity and a person by a diagram named Funion.

3.1 Definition of Fun

In order to understand what makes difference between fun and pleasure, I define distractive, trivial, momentary, spectacle and activity-dependent as distinct attributes of fun from pleasure by referring specified characteristics of fun in the book named Funology (Mark Blythe and Marc Hassenzahl, 2003).

Distractive

Fun distracts an individual from him or herself. A fun activity or object draws one's attention to the situation. The dancing traffic light by Smart², a car manufacture company, is an example. Pedestrians are captivated by a dancing figure in the signal. It makes them stop walking or crossing the road and keeps their eyes on it and finally letting some of them follow the action. It is created in order to avoid people j-walking by using a simple entertainment.



Figure 03. The dancing traffic light by Smart

Pleasure is, on the other hand, absorption of an experience. Experiencing flow is one kind of pleasure that it is felt when the experience is on peak.

Trivial

The definition of fun in most cultures carries implication of triviality. In English, fun is lighthearted pleasure. Fun has similarly defined as trivial and a charming pleasurable feeling in Korean dictionary. Fun is not serious emotion. This is well explained with an example of high

2. Smart, "The dancing traffic light", last modified August, 14, 2014.
<http://int.smart.com/en/en/index/smart-campaigns/whatareyoufor/for-a-safer-city.html>

art. We do not necessarily feel 'fun' when seeing an elegant artwork or listening to classical music but these experiences provoke pleasurable feeling by satisfying multisensory sensation. Whereas, watching a short video in YouTube rather gives excitement and makes us laugh out in a minute.

Momentary

Fun is evoked in an instant by a stimulus in a certain context. When people are asked about fun, cannot easily answer even though they laughed out while watching a video even a minute ago. When they come up with fun thing, it is already transformed to pleasure on the reflective level. However, we are able to evoke fun during imagining the pleasurable experience and things instantly.

Spectacle

During fun, the senses must be engaged and there must be spectacle. It can be expressed with sensory stimulation. The bright and luminous colors of children's toys, new creatures and sound effects in the Avengers movie are a good example of the spectacle of fun. We demand increasingly violent distraction; the leisure society is also the society of the spectacle.

Activity-dependent

Fun does not independently exist itself. It is a relationship between ongoing activities and state of mind in the context of product use. According to a paper written by Denis A. Coelho and Sven Dahlman (2001), Fun can be maximized depending on the expectations of the user, the activity that is being performed and the consequences of the interaction.

3.2 Elements of Fun

In this thesis, I define eight elements of fun that designers can utilize when creating a product with fun.



Figure 04. Elements of Fun

Unexpectedness

Unexpectedness is a core element of fun. It makes people amazed at an object or event in the expected condition. In the end of *Funny or Die*, people watches unexpectedly Michelle Obama bites a carrot with apathetic face, and will laugh. Because people usually think the first lady is formal and do not think she comes out in such a TV show for fun. Breaking a small rule signals fun.



Figure 05. An example of unexpectedness: Michelle Obama appearing in Funny or Die

Surprisingness

Surprisingness is defined as extraordinariness. It is evoked by something abnormal against the expected context. Let's take The World's Deepest Bin created by the Fun Theory. com as an example of it. When people drop trash into the trashcan in the park, it sounds as if someone falling down a long well, surprising people. Because nobody thinks a trash bin yells. This surprisingness attracts people to do more action on it by distracting them from what they were doing.



Figure 06. An example of surprisingness: The world deepest bin

Intensiveness

Intense sensory stimulations evoke fun. Clubs have lots of effect such as lighting, music, scent to excite our multisensory sensation. The stronger effects are, the more fun our senses feel.



Figure 07. An example of intensiveness

Variety

Variation in the same condition makes fun by providing people with opportunity to be creative both in a process to enjoy seeing differences and in a process to choose their favorite out of the variations. Rubber ducks that have all different graphic patterns on their surface not only makes our eyes fun and excited, but also drags us to a creative stage to choose the most favorite ducks.



Figure 08. An example of variety: Budduck

Expressiveness

Expressiveness is fun when people consider a product as an emotional object. Many studies related to car aesthetics insist that when people think of a car as a person they smile, and feel more positive emotions towards the car.



Figure 09. An example of expressiveness: Line characters

Novelty

Novelty is defined as fun from continuous stimulation in a pleasurable experience. Finding this element lets people keep engaged in the experience. Walking in the city is one of examples in terms of the fact that people feel trivial fun and are amazed at the ever-changing surroundings.

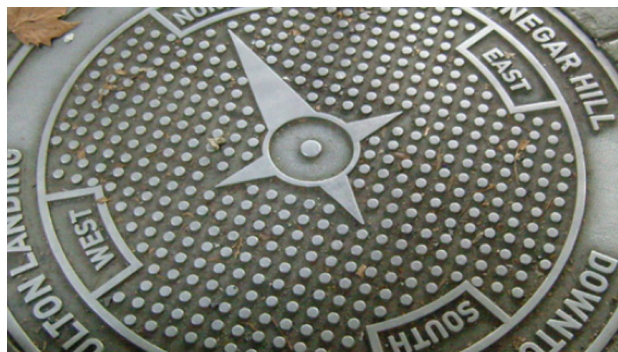


Figure 10. An example of novelty: Travel

Humor

Humor is defined in this thesis as a factor that makes people laugh. A smile is the best indicator that an individual has positive emotions about a product experience or an activity.

Memorability

Memorability can be caused by either positive or negative emotion from an experience. However, it should be limited to positive emotions. By doing so, people will bring back good memories of a thing that once they used to have fun with after volatile emotions have gone away and fun is transformed to long lasting pleasure. For instance, Radio Flyer wagon has been one of iconic toys in the United States. The elderly man in the picture is smiling on the Radio Flyer wagon. He used to have fun riding this and the fun memory makes him smile again and try to ride on it even in his old age.



Figure 11. An example of memorability: Radio Flyer wagon

3.3 Funion: A Process of Transforming Fun to Pleasure

I found a pattern that instant fun in the beginning of a relationship between a product and a person motivates the person to use the product, potentially allowing him or her to have a deeper level of pleasure from the accumulated relationship. In this context, I believe that fun transforms to pleasure throughout a process in which a product and a person interacts and accrues a pleasurable relationship. Figure 12 below explains an emotion development process about how fun transforms to long-term pleasure, taking Norman's idea as a reference (2004)³.

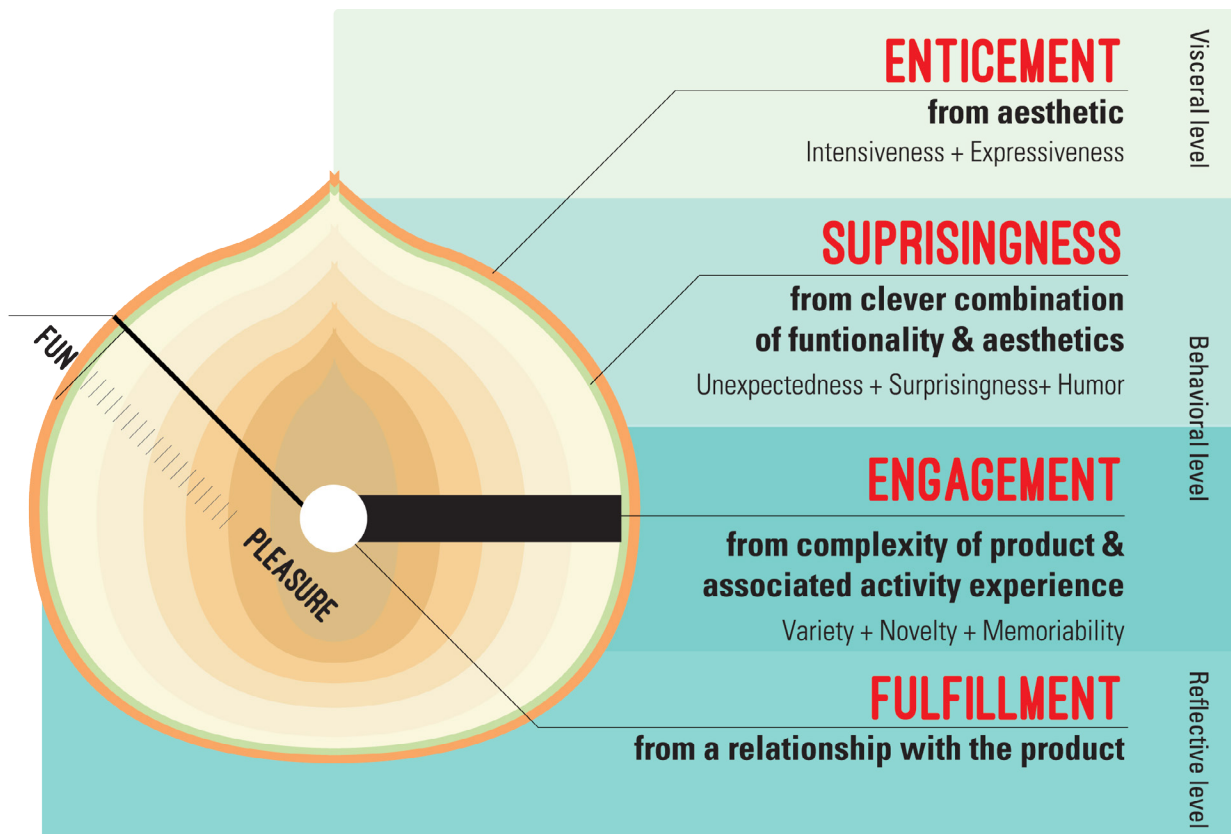


Figure 12. The Funion: Development of emotional status throughout a fun product experience

3. Norman, D., "Four: Fun and Games" in Emotional Design (New York: Basic Book, 2004)

Enticement in The Visceral Level

Fun is evoked in a product experience when a person is enticed by aesthetics and novelty of the product at the visceral level. Unexpected and intensive aesthetic and multisensory experience in the visceral level expresses itself to its targeted audience and attracts people to try the product.

Surprisingness in The Visceral Level and Behavioral Level

When people figure out what it is while trying the product, it will surprise them. It pertains both in the visceral level and the behavioral level. Once people decide that the product lets them have a good memory and is fun enough to use again, a relationship between the product and the people starts.

Engagement in The Behavioral Level and Reflective Level

As the users spend time using the product, it enables them to feel more various kind of positive emotions. The more time they are engaged in the experience, the more complex emotion they feel. From this point, it influences both the behavioral level and reflective level.

Fulfillment in The Reflective Level

Finally, they are fulfilled with the relationship and the experiences. Affection about the relationship is maximized in this stage. It potentially gives the users a sense of esteem and self-actualization, which provides a deeper level of pleasure.

CHAPTER 4

FUN PRODUCT FOR ENHANCING CINCY RED BIKE EXPERIENCE

In chapter four, fun is defined as a distinct emotional state from pleasure, whose characteristics are ***distractive, trivial, spectacle, momentary*** and ***activity-dependent***. ***Fun*** is sparked in the beginning of a pleasurable experience, which can be found as a pattern of ***developmental process of positive emotions***. In the context of product experience, fun is felt in a deeper and wider level when an activity is associated with the product, potentially enabling a user to experience more complex pleasure.

Throughout this research, I assumed that ***a product that provokes fun motivates people to be engaged in a product experience associated with an activity, encouraging them feel pleasure fully from both the product and the activity.***

Chapter four and five examines this hypothesis by choosing the Cincy Red Bike, a bike sharing scheme operated in Cincinnati, Ohio as a subject. Chapter four describes what is the Cincy Red Bike and insists rationales for selecting this subject for demonstration. Empirical research and analysis was carried out with students at University of Cincinnati, targeted as a group for experiment.

4.1 The Cincy Red Bike

The Cincy Red Bike is a bike sharing system and is a part of B-Cycle in the United States. Expected to provide Cincinnati citizens with a potential commuter transit alternative as well as city riding for free time, the Red bike had much more riderships than anticipated⁴. James Baron, executive director of Red Bike, said ambitiously “It gets you started biking and that’s going to

turn you into a long-term cyclist.”⁵. The service is looking to expand into Northern Kentucky⁶.

4.1.1 Current Situation in Overall and Opportunities of Improvement of Cincy Red Bike at University of Cincinnati



Figure 13. The Cincy Red Bike

Cincy Red Bike currently operates 35 docking stations and 260 bikes in the downtown and uptown area in Cincinnati. 22 stations are installed in downtown and eight stations are located around University of Cincinnati which is uptown. The bikes are circulated by the organization depending on the availability of each station. There are two rent plans; one is 24-hour pass for eight dollars per a day. The other is annual pass for 80 dollars per a year. Either ridership comes with 60 minutes of ride time with each check out.

4. Chris Wetterich, “Cincy Red Bike ridership blows away expectations”, Cincinnati Business Courier, October 17, 2014
<http://www.bizjournals.com/cincinnati/news/2014/10/17/cincy-red-bike-ridership-blows-away-expectations.html>

5. Cedric Rose, “The Red Bike Revolution”, Cincinnati, November 24, 2014,
<http://www.cincinnati.com/citywiseblog/red-bike-revolution/>

6. Scott Wartman, “NKY sees Red Bike value, seeks money for stations”, Cincinnati.com, January 17, 2015
<http://www.cincinnati.com/story/news/2015/01/17/nky-sees-red-bike-value-seeks-money-stations/21887679/>

Ridership increased seven times more than projected in the first week of operation. Most popular stations are Fountain Square, 12th and Vine streets, the Freedom Center and Main and Orchard Streets which are located in Over-The-Rhine (OTR).

There is no doubt that the Red Bike is doing better than expectations. However, the fact that most usages are made in downtown infers that usages in uptown area, where University of Cincinnati is located, are not as many as were expected so the organization leaves it behind. However, According to Cincinnati Bike Share Feasibility Study (2012), students at University of Cincinnati were considered as one of the biggest potential group of users.

In order to understand current situation of Red Bike in the uptown area and of UC students, I interviewed UC students about their impression of Red Bike and the people who were involved in organizing the system. Each section below explains each problem from the research.

Aesthetic of The Red Bike

Everyone pointed out that the design is industrial looking, not user friendly. Unfriendly and clumpy appearance does not trigger desire for UC millennial to try the service.

Usability

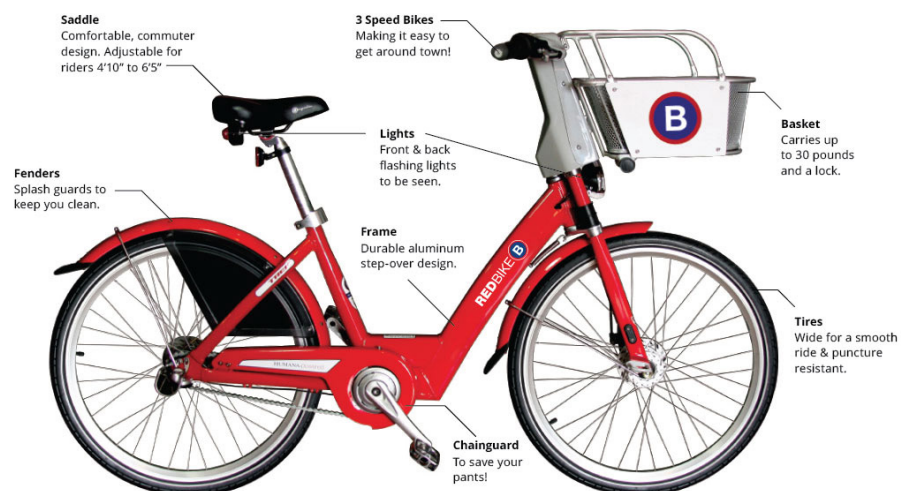


Figure 14. Features of the Red Bike

As shown as figure 14, Cincy Red bike has many features on its frame; such as basket, GPS, light for enhancing riding experience. However, the weight of the bike is a critical shortcoming for female students who hesitate to use Cincy Red Bike.

Cost

As mentioned above, Cincy Red Bike has currently two ridership options; daily pass and annual membership. The cost of daily pass is 8 dollars and annual membership is 80 dollars. Also, additional charges apply for trips over 60 minutes with any Red Bike passes. This is a big expense for students who are short of money to try a sharing bike. Moreover, a user should dock a bike every hour not to be charged extra fees. This economic barrier makes UC students hesitate to use Red Bike.

Geographical Difficulty

Geography of Cincinnati is hilly, especially University of Cincinnati. This is also pointed out in the feasibility report(2012). It said that “Uptown is more undulating, although most hills are within the tolerances of casual cyclists.” (Alta Planning + Design, Cincinnati Bike Share Feasibility Study, p.21). But the target users for bike sharing are not “casual cyclists”. It means that the steep slope is a big challenge for those users.

Competitive Service Provider

University of Cincinnati also provides a free bike rental service as known as Bearcat Bike Share to UC students. Any UC students can rent it for 3 days. It is expected to increase UC students' health and decrease carbon emission and parking issues. 50 bikes which are a combination of basic mountain bikes and crossover bikes, are currently on service at two stations in UC campus. Though professionals argued that both services do not interfere with



Figure 15. Bearcats Bike Share of University of Cincinnati

each other because the usage cycles of both systems and bicycles are different, it makes a big difference in actual using this service for students.

4.1.2 Rationale of Necessity of A Fun Product for Cincy Red Bike at University of Cincinnati

This thesis is to ultimately state an emotionally positive relationship with a product and a person and examines how fun, defined as an activator of pleasure in experiencing a product, attracts people to be engaged in the relationship and leads them to long-term pleasure. In this context, Cincy Red bike is a good subject to explore.

This is because, first of all, fun is an activator of a pleasurable experience. The Cincy Red bike in uptown is targeting University of Cincinnati students who rarely ride a bike and do not have a bike. It means that they do not experience the pleasure from biking that most cyclists feel. In this context, a fun product leads UC students to be engaged in the bike sharing experience.

Also, positive emotions such as fun and pleasure make people ignore minor problems

with a product (Norman, 2004). It also means that fun encourages people to try the product in positive moods, removing barriers around it. In the context of Cincy Red Bike, a fun product for the service lets UC students to try it regardless of problems mentioned above.

Moreover, riding a bicycle is not only an activity, but an interaction between a bike and a person. As stated in chapter 3, fun and pleasure is derived more from ongoing activities with a product. Product experience with an activity enables the person to enjoy more complex and richer experience.

For these reasons, the Cincy Red Bike was selected to test experimenting the hypothesis that a fun product for the Cincy Red Bike motivates University of Cincinnati students to be interested in the bike experience, potentially allowing them to feel long-term pleasure from both the product and riding experience throughout the engagement.

In order to create fun experience for UC students specifically, empirical research on what makes them feel fun is required. Research methods and analysis results are discussed below.

4.2 Empirical Research: What Is Fun to UC Millennial?

Since the thesis targeted students of University of Cincinnati for demonstration, It is required to comprehend what makes US students feel fun specifically by understanding their culture and behavior. By doing so, the most acceptable design demonstration could be derived. Each participant took anywhere from 15 to 20 minutes to go through the entire testing process. The next 10 minutes were used for an informal interview.

4.2.1 Research Methods

Interview

Interviews with UC students were conducted in order to get qualitative data of UC millennial' fun and what kinds of products, activities and entertainments makes them feel fun and the reasons. They answered a set of questions below. They also responded to following questions besides these.

1. Entertainment

- 1.1 What entertainment are you interested in these days?
- 1.2 Why do you like it?
- 1.3 If you feel fun, why do you think it's fun?

2. Activity

- 2.1 Do you have any activity you're enjoying these days?
- 2.2 What makes you engage in the activity?

Product

- 1.1 Do you have any fun and entertaining product?
 - 1.2 Have you ever desired a product that made you just buy impulsively?
 - 1.3 Why do you think that's fun?
 - 1.4 How do you define fun?
-

Meanwhile, another set of interviews were done with passionate cyclists from different cities in the world in order to acquire insights and find pleasurable experience in common sense that can be implemented in the design strategy for fun.

Draw It Out

Interviewees were given a photocopy (figure 16) of current Cincy Red Bike design and



4.2.2 Analysis and Results: UC Students' Fun

11 participants of UC millennial and four participants of enthusiastic cyclist joined interviews and all of them gave qualitative data about fun. All the participants age from 18 to 24. Nine responded of Draw it Out method from the interviewees were collected. Two sections of graffiti wall were organized at UC main campus.

Coding, **affinity diagram** and **corresponding diagrams** methods were used for analysis. **Coding** is used to extract highlighted keywords, facts from all the data from interview, observation, experience, literature reviews in order to find implicit meanings. **Affinity diagram method**, as know as KJ mapping, is used to sort facts and keywords from research data and categorize them in high level of ideas. The data were analyzed into four insights and these are interpreted into design strategies including the elements of fun in each stage of emotional development process in the next chapter.

Insight 1: Multisensory stimulations and Instant Feedback

UC students in the generation called as millennial who grew up with IT technologies as well as significant developments of technologies that embody multisensory excitements which employ dynamic stimulus by combining visual and auditory effects together. Also, these technologies make them to desire various kinds of feedback from a product by tangible interaction or body movements.

Though a visual stimulus has the powerful and the most effective effect in providing people with fun, a combination of visual and auditory effects makes a fun thing or a fun activity richer and more exciting. An interviewee said that she likes watching music videos because provides both visual fun by the singer's appearance, stage managements and color effects of the video and auditory fun by the music. She said that the combination provides novel stimulus to

her brain.

Also, Online games such as League of Legend or game players such as Wii or Xbox 360 is now equipped with not only high resolution graphic, but also with vivid sound effects.

Moreover, the game players especially have more options that people interact with the devices. An interviewee said that the kinetic Xbox 360 senses players' body movements by using a camera and applies the movements in the game instantly. In that way, the players can see their movements through visual feedback on screen and it makes them have more fun. Mobile applications also give them instant enjoyment by providing various type of feedback through tangible interaction and various actions.

Insight 2 : Using Creativity

It turned out that UC millennial truly enjoy activities in which they can fully use and stimulate their creativity. Most of interviewees answered that they enjoy crafting, drawing, or activities that stimulate their creativity and freshen their minds. A Transportation Design student said that she likes watching sci-fi movies because creatures in the movies inspire her to come up with creative ideas for her works. Other students also said that they enjoy going to museums or art exhibitions since these activities allow them to collect insights and apply those in their life. Going window shopping also has something with having fun of getting inspired by creative things or activities in the way that these stimulate UC students to use their creativity in their work and life. A quote that “Making something unenjoyable enjoyable” by the interviewee who mentioned window shopping well represents the insight.

Halloween is also another good example of using creativity. A group of UC students mentioned Halloween in the way that people become creative in thinking of what they are going to be and how they make their costume. At the same time, Halloween also provides them with

excitement and enjoyment from expecting and seeing others' creative works.



Figure 18. A picture of UC students' celebrating Holloween

Personalization is one of means to use creativity UC students mentioned. Smartphones are the example that most interviewees mentioned in terms of fun from personalization. Most interviewees said that smartphones are the most exciting belonging because flexibility of smartphones in terms of choosing their preferred mobile application allows them to consider their smartphone as an extension of themselves and to use their creativity in customizing their phone with affection.

Insight 3: Social Interaction and Emotional Exchanges

A common opinion is found that when they have fun or enjoy something, there are mostly their friends and emotional and behavioral interactions with them. A fashion Design student said that she enjoyed doing something with her roommates such as watching TV shows or doing homework. When she answered about her fun things, she often mentioned her roommates and activities with them.

Also another UC graduate student who like riding a bike also said that biking with her friends gave her much more fun and excitement because they can share the same experiences, as well as can interact each other while riding a bike.

From answers of the graffiti walls, anonymous participants named such things; hanging out friends, drinking, talking and so on. These results can be assumed that social interactions with someone in common in the same social circle makes a activities or a product experience more fun and positive emotions.

The reason why they feel more excited and fun implies that there are emotional exchanges based on their behaviors. When they asked about fun products or things, two of interviewees mentioned Thomas and Friends, toy trains that has face on the front from a children's animation (Figure 19). He said that the face makes it easier for him to feel emotionally familiar to the product and actually interacting with it.

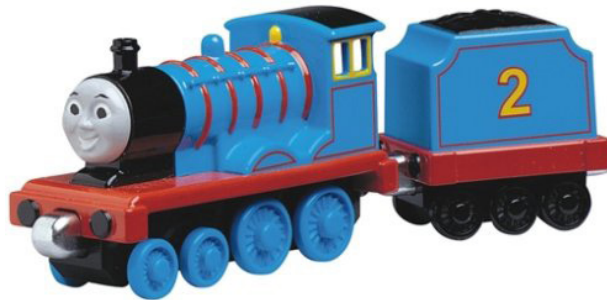


Figure 19. Thomas and friends

Pets also have a lot to do with emotional interactions. Dogs or cats were found in the graffiti wall. It is because pets also express their emotions by their face or behaviors. It allows people to share their feeling with their pets and expand fun and positive emotions throughout emotional feedback.

Insight 4: Enjoyable Process

UC students tend to enjoy and have fun throughout a process that has them engaged in a product relationship. An Industrial Design student answered that finding a used car for him is one of fun activities nowadays. He said he also enjoys surfing the Internet websites to see what kinds of cars are currently on the market, comparing his favorites out of the cars.

Another undergraduate students, who considered himself as a creative person said that searching artworks via the Internet is an enjoyable process itself. Facebooking is another example that shows an engaging process which most UC students enjoy. Interviewees said that they have fun checking what is going on around their life, sharing their experiences and getting feedback from friends while facebooking. It means that they feel fun from while engaged in the process, not from Facebook itself.

Traveling, walking in the nature mentioned by interviewees and respondents of graffiti wall are also followed by other enjoyable activities such as finding changes of the world, seeing exotic sceneries and getting fresh air in the process.

This insight implies that understanding a process in a product and an activity holistically makes them more enjoyable.

CHAPTER 5

DESIGN DEMONSTRATION: FUNAMIGO

Qualitative research data in chapter four analyzed into four insights. The analysis determined the most suitable functionality for UC students' fun experience with Cincy Red Bike and is incorporated with the Funion process in this chapter.

5.1 Funamigo: A Personified Smartphone Docking System for Cincy Red Bike

Given insights, a function of the fun product is determined as a smartphone dock for the Cincy Red Bike. All the respondents considered their smartphone as the most fun thing as well as the biggest part of their life that they cannot be apart from. This product will extend the functionality of a smartphone, optimizing it to biking experience.

At the same time, it is designed as a personified shape in order to enhance interaction between the product and a person emotionally. As discussed in the previous chapter, UC millennial emotionally feel close to things that appear to have a face or express feelings (e.g. a bone head comb and toy train with face) and have more fun by socially interacting with them. This attribute is also defined as expressiveness in chapter three. The defined aesthetic of the product potentially allows UC millennial to have a deeper relationship with it.

This product and an associated service are called Funamigo that means “a fun friend to ride the Cincy Red Bike with you”.

5.2 Experience Design Strategy and Functional Requirements Based on Funion

A step-by step design strategy for Funamigo is established on the basis of Funion and research analysis. This method of corresponding research to the emotional development process of pleasurable product experience helps to build the most acceptable design strategy from a product aesthetic to its accompanying experiences by grasping the concept holistically.

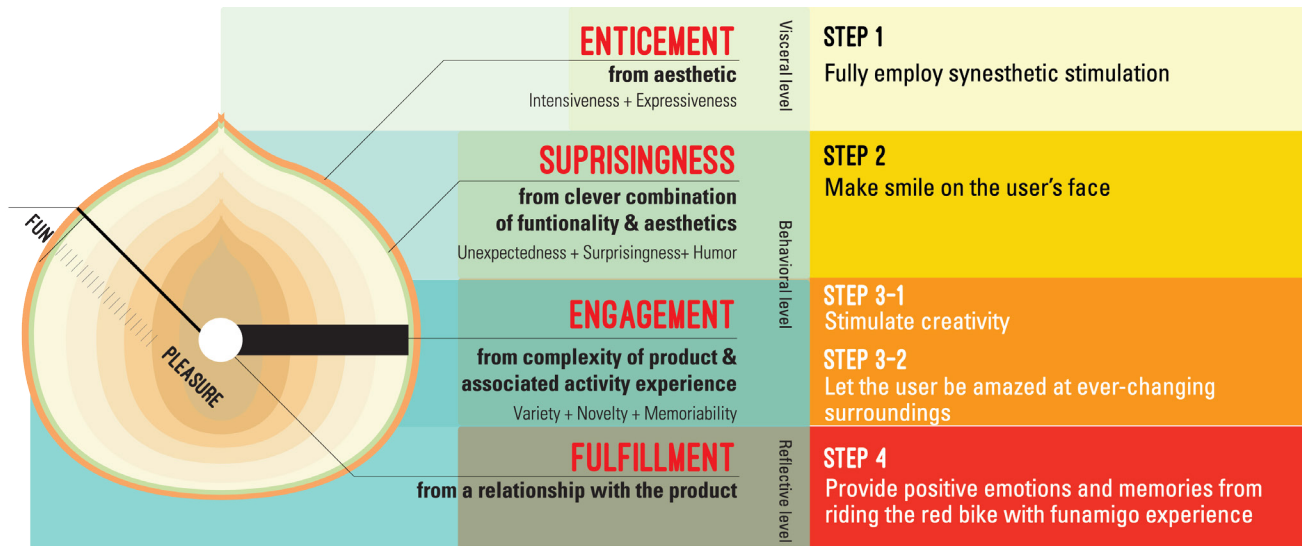


Figure 20. A diagram of design strategies corresponding to Funion

Step 1 Employ Dynamic Sensory Stimulation in the phase of enticement

In order to draw attention, Funamigo should give multisensory stimulus to UC students who are accustomed to sensuous amusement and are more willing to accept the stimulus. Both visual and auditory intensiveness is utilized to attract the targeted audience by expressing its existence by an outstanding aesthetic and a voice.

Step 2 Make Smile on The User's Face in The Phase of Surprisingness

Once it succeeds to take a user's eye, it should be followed by unexpectedness and surprisingness. This phase happens in an instant. A smile indicates the point that unexpectedness changes to positive emotion. In this stage, the user experiences Funamigo and

Red Bike, potentially being motivated to join a membership.

Step 3-1 Stimulate Creativity in The Phase of Engagement

A motivated UC student will search information about Funamigo. It is important for Funamigo to provide users with continuous fun factors, allowing them to be engaged in the experience. Personalizability of Funamigo enables the user to use their creativity as well as to have affection and a deeper relationship with it throughout the process.

Step 3-2 Let People Be Amazed at Ever-Changing Surroundings

In this step, users use the ridership with Funamigo. The user feels fun and pleasure while getting engaged in the relationship with his or her Funamigo, as well as riding a bike. Changes in the user's surroundings let him or her experience pleasure from novelty in this stage, having him or her feel deeper and more complex emotions.

Step 4 Provide Positive Emotions and Memories from Both Funamigo and Red Bike in The Phase of Fulfillment

Fun memories throughout engagement with Funamigo encourage the user to sustain the ridership, having him or her cherish the relationship in the end. It makes the rider fulfilled with rich and long pleasure on the reflective level.

Customer Journey of Funamigo

In order to be more specific, functions that a user would experiences with Funamigo from the enticement to fulfillment and the user's action is defined in is the diagram of Funamigo

work Flow based on the design strategies(Appendix 2). The diagram shows what functions would be used and what kinds of feedback should be in each step and context, what will be touch points between the service and the user based on the scenario. These visual information diagrams help to grasp its working process at a glance.

5.3 Overview of Funamigo System and Functions

Funamigo is a service that consists of a device which functions as a smartphone docking station for biking and a mobile application. The device identifies the user, archives information of its activity to the application and tangibly and emotionally interacts with the user. The mobile app allows a user not only to track his or her activity, but also to control some functions of Funamigo. Figure 21 explains the concept visually. In order to embody the system in design, functions and features were determined below.

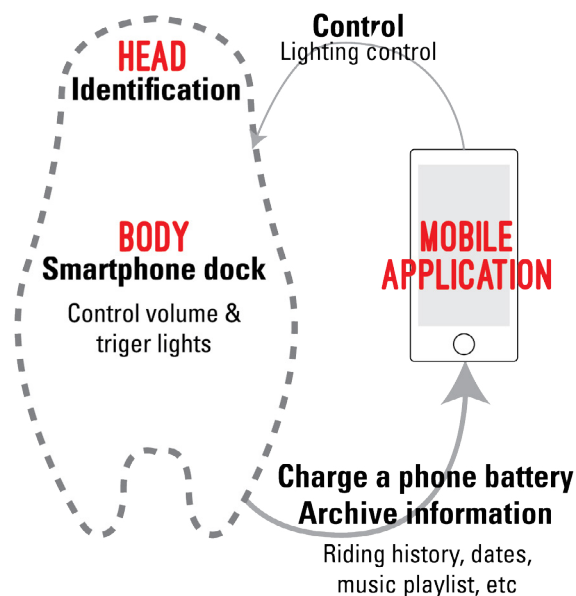


Figure 21. A diagram of the overview of Funamigo system

Features

User identification: A physical part of the device identifies a user.

GPS: It allows the device to track and archive its activity to the app as well as to let the service operator identify its current location.

Dynamo: It is an electrical generator to produce direct current with bike movement. Generated electricity is provided to charge a phone and let the device function.

Speaker: A speaker enables itself to talk to and play music via the user's smartphone.

LED lights: Different light effects based on functions and talks gives feedback to a user.

Headlight: Funamigo is equipped with a headlight that is automatically turned on depending on the amount of day lights for safety.

Functions

Talk: Funamigo is an interactive device. It says a simple sentence based on user interaction and biking activity. It enables the user to interact with the product. The user has more fun by instantly and constantly getting feedback from the device. While communicating, he or she potentially feel more positive emotions.

Customize: A user is able to customize their own Funamigo by selecting one out of five different aesthetics and personalities. Depending on personalities, feedback through talk and lights is differentiated. Details will be discussed below.

Charge a smartphone: Funamigo charges a smartphone, allowing people not to worry about shortage of batteries while riding.

Music player: speaker equipped with a Funamigo plays music from their smartphone, making biking activity more fun and memorable.

Business Model

As discussed in chapter four, the current business model is one of the biggest difficulties for UC students to use the Red Bike, Funamigo possibly offers a special membership plan to UC millennial. UC students would be allowed to access Funamigo membership with monthly payment and to use Red Bike with longer time than 60 minutes. This will reduce financial burden and encourages UC students to join the membership more.

5.4 Design Demonstration

5.4.1 Overall Aesthetics of Funamigo

As defined above, Funamigo is personified by taking a personified shape in aesthetic as an object conveying emotion. It is made up of two main parts.

The first part is a portable key fob acting as an identification of the membership. It has five different variations and interactions based on five different personalities assigned.

The second is a body that has all other functions and is attached on the handlebar to the bike. Specific aesthetics of the overall form are discussed in the form evaluation study section.

5.4.1.1 Form Evaluation Study

Objective

In this thesis, unexpected and expressive form of the product in a given context is implemented as a mean to provide a visually fun aesthetic. Concept designs (Appendix 2) are classified into four big design languages on a design image scale in which axis X is defined from abstract to depictive and axis Y is from geometric to organic. According to the scale, form A is relatively more geometric and depictive in terms of expressiveness than the others. Form B is also geometric but more abstract than form A and form C. Form C is more organic in shape and more depictive. Form D is organic but abstract in shape.

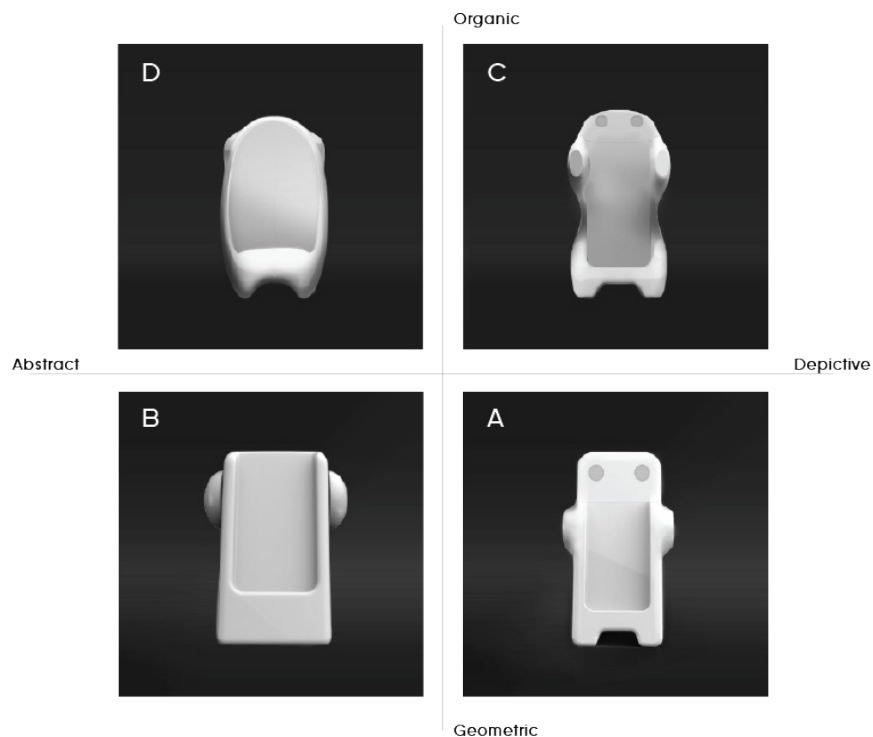



Figure 23. A form image scale for the form evaluation study


Based on the image scale, a survey targeting UC students was conducted in order to evaluate how much each form makes a respondent feel fun overall. The survey also evaluated unexpectedness and humor from a form in an expected context to find a correlation between fun and personal preference as well as to find a consensus among the targeted user group. The likert scale was employed in order for a participant to rate each question with given three images of each form. Participants were asked to rate numeric value of questions in four sections. The questionnaire is described in figure 24. A whole survey form is in appendix 4.

N-1 How much do you feel humor on this form? Please rate it on a scale of 1 to 10.




0 1 2 3 4 5 6 7 8 9 10
Humorous

N-2 How much do you feel fun on this form? Please rate it on a scale of 1 to 10.



0 1 2 3 4 5 6 7 8 9 10
Fun

N-3 How much would you feel unexpectedness on this object in the context described in the righthand image comparing with the context without the object. Please rate it on a scale of 1 to 10.



0 1 2 3 4 5 6 7 8 9 10
Unexpectedness

Figure 24. Questions of the form evaluation survey

Limitation

Fun is a complex of the aesthetic, interaction and experience of the product. In my argument, form is one of the elements to entice people in the visceral level and I assumed that unexpectedness and humor pertain to this level. The survey asked about these two attributes out of seven fun attributes; Unexpectedness, Humor, Surprisingness, Intensiveness, Variety, Novelty, Memorability. However, this survey does not ask expressiveness which pertains to the

enticement level since it is already determined as a main theme of Funamigo in the way that Funamigo has emotions and personality.

Analysis and Results

22 male UC students and 37 female students, total 59 UC students responded to this survey. And 84% of them is in the 18 ~ 23 age range. Mean values for the same question of each section is compared.

As a result, **form C was the highest rated in all the values.** In the question asking overall fun of the four typical forms, form C has the highest mean as mean of 5.47. It is also the highest rated in the question of humor as 5.27. Form C got the highest in terms of unexpectedness as 5.69. Finally, form C gained the substantial number of preference than the others. The details are analyzed in the comparison tables below.

It is concluded that organic form overall and describing a face gives feelings of fun for UC students. At the same time, it is also proved that something fun is the most preferred by them.

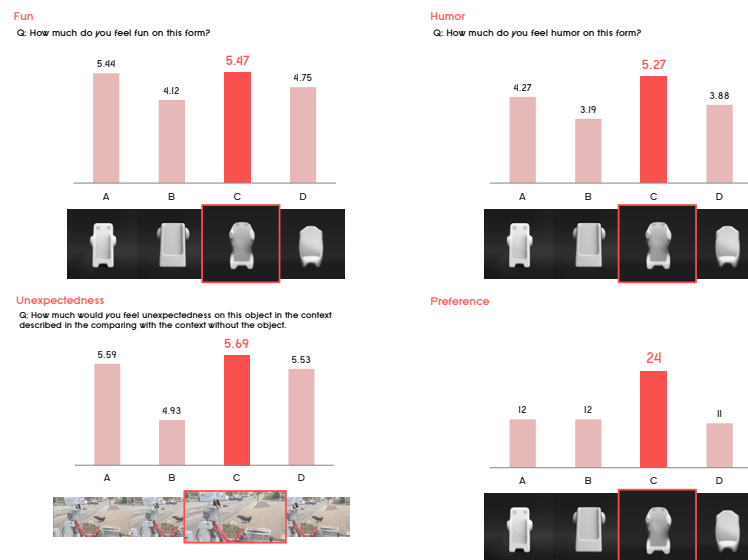


Figure 25. Analysis of the form evaluation survey

5.4.1.2 Design Refinement of Funamigo Device

Design direction was narrowed down based on the survey analysis and a final design was developed. Details of development process are in appendix 5. The final prototype and scenario is implemented to pilot user testing and evaluation activity of Funamigo.



Figure 26. A rendering image of Funamigo

As concluded above, Funamigo has a organic and depictive shape in overall. There are two parts. The head is a customizable portable identification. The body is installed on the handle bar. A user will be able to rent any Red Bike with the body by docking a head of Funamigo.

5.4.2 Interaction of Funamigo

There are two ways for a user to interact with Funamigo; One is based on physical interaction with the device and the other is based on mobile interaction.

5.4.2.1 Product Interaction between Funamigo and A User

Interaction between a user and the device is the main part of interaction. The user is allowed to interchange emotions with the device easily and get feedback in different ways based on what he or she selected out of five personalities of Funamigo when joining the service. Tangible interaction occurs simply through a user action that the user touches Funamigo's hand by hand. Such action controls sound volumes and activates voice and light feedback.

The voice and light feedback are distinguished depending on each personality. This variety provides a user with fun of choosing his or her own device. The personalities are defined as described in the table below.



Figure 28. Five selected personalities of Funamigo

5.4.2.2 Mobile Application of Funamigo

A mobile application supports a user to **archive**, **track** their activity and **control** lights effect depending on expected user experiences that Funamigo is supposed to provide. Also, because UC students join the service through the mobile app, it should have beautiful aesthetic and enjoyable interaction feedback.

A Flow Chart of Mobile Application

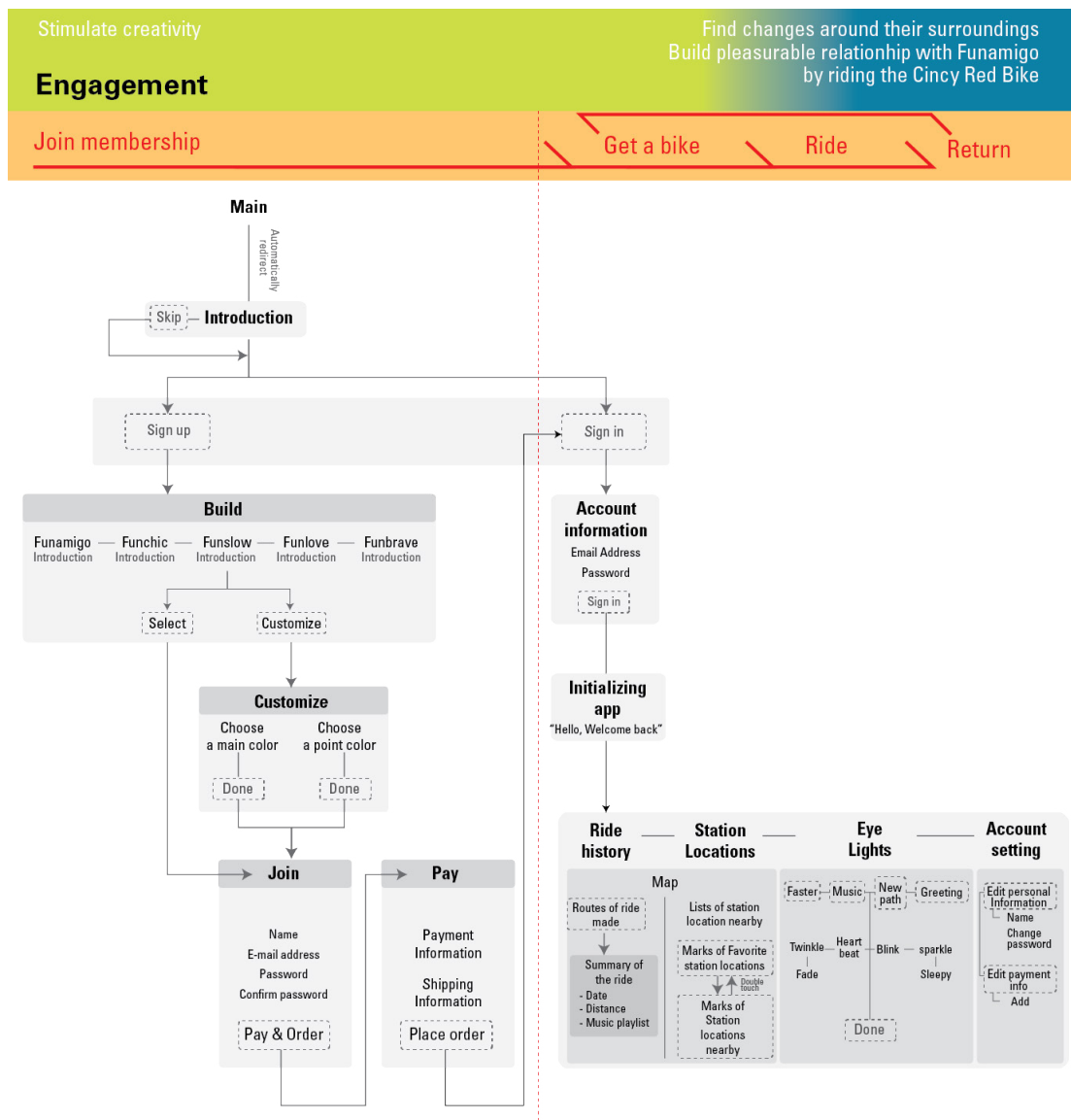


Figure 29. A flow chart of Funamigo mobile application


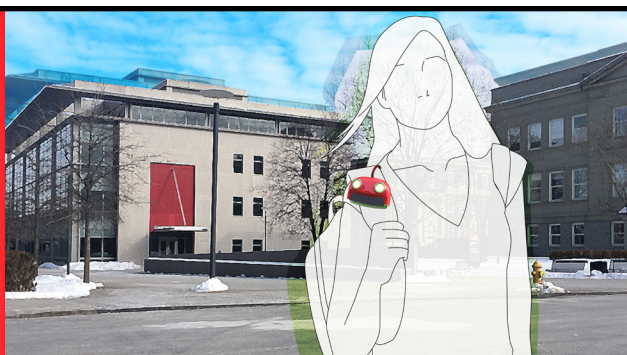
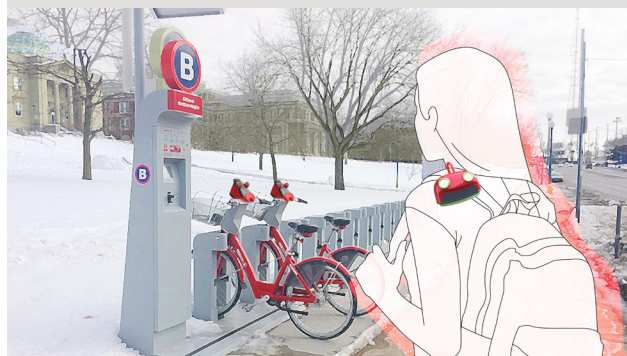

Figure 29 in the previous page is a diagram of workflow of the Funamigo application associated with engagement in the design strategy. It helps to understand how the mobile app works while UC students experience the Funamigo membership.

Design Refinement of Mobile Application

The flow chart was transformed into a mobile application form visually. The details of design are in appendix 6.

5.5 User Scenario

A user scenario was created for better understanding based on the workflow defined above. It specifically explains how a user uses the functions of Funamigo that evoke fun and pleasure in the engagement phase.

	
<p>#00 Intro A day of Funamigo</p>	<p>#01 “Hey, I need a body!” Jenny joined a Funamigo ridership and got her Funamigo couple days ago. While wandering on the campus, Funamigo talked to her. “Jenny, I think I need a body. Why don’t we go ride the Bike?”</p>
	
<p>#02 “Yuhoo! You got it!” Jenny found a Cincy Red Bike docking station nearby and went there. Then, Funamigo was excited. “Yuhoo!”</p>	<p>#03 - 1 Check in She docked Funamigo on its body to check in the system.</p>



#03-2 “Welcome, Jenny”

Then, Funamigo’s eyes blinked and said.
“Welcome, Jenny! Let’s go on a ride together!”



#04 “We’ll have more fun with your phone!”

Jenny wanted to charge her phone, as well as check emails or messages when she gets them. She docked her phone on Funamigo’s body and it started to charge it.



#05 “Play music!”

She hit the road and headed to a part near campus. When she began enjoying fresh air, Funamigo gave her a suggestion.

“We need awesome musics for this great ride.”

She stopped a little bit and play a music play list in her phone. Funamigo started to play it with lighting its eyes up.



#06 “Hahahaha, run much faster!”

Listening to music, she went down a hill, and speeded up. Funamigo was excited by the speed and laughed out with blinking its eyes rapidly.

“Hahahaha, Jenny! Go faster!”



#07 “It’s so beautiful!”

After enjoying sceneries around her, she found a new route and found a beautiful view and stopped there for a while.



#08 “It’s time to go!”

As night fell, Funamigo automatically turned on the headlight and said.

“Jenny, it’s time to go”



#09 “Have a good night, Jenny. You were awesome today”

She went back to the station, checked out and pulled out Funamigo. Funamigo wished a good evening to her. “Good night, Jenny. You were awesome today. See you again!”

“IT WAS A LONG DAY”

“GOOD NIGHT”

#10 Outro

Figure 30. User scenario

5.6 User Test

5.6.1 Objective

A user test section was held at Design, Art, Architecture and Planning building at University of Cincinnati in order to demonstrate and evaluate hypotheses of the thesis that **1) a fun product motivates people to use the Cincy Red Bike and join a membership,** **2) a product relationship between Funamigo and a user through functions and**

interactions has the user experience pleasurable emotions more, potentially allowing him or her to sustain the ridership.

5.6.2 Test Methods and Props

Participants were required to fill a survey form which is made up of three set of questions. First of all, they were asked to answer their impression on the Cincy Red Bike. In the second set, the respondents saw Funamigo on the Red Bike with a brief explanation. Then, they were asked about their impression and feeling on Funamigo and how much Funamigo would motivate them to join the Cincy Red Bike. Lastly, they watched a user scenario video and were allowed to experience Funamigo on the bike in person. And they answered the third set of questions asking their feelings and willingness to sustain a ridership after experiencing Funamigo in person.

For the test, participants were provided with ***1)a survey questionnaire, 2)a working prototype of Funamigo and a mobile application that demonstrates some functions and interactions, 3) a Cincy Red Bike and 4) a user scenario.***

Details of questionnaire are in appendix X. The working prototype functions simple interactions of talking to people and lighting up. Details of the other interactions and experiences are explained in the user scenario.

5.6.3 Limitation

Due to the inclement weather, the evaluation section was held in the building. Also, sufficient time is required to fully demonstrate the process that fun transforms to pleasure. In this test, time factor is replaced with the user scenario.

5.6.4 Results and Analysis

Results

Eight UC students participated in the user test. Three of them were male and five were female. Three of them were between 18 and 23, another three were between 24 and 39. One participant was between 30 and 35 and one participant were between 36 and 41.

In the first section about the Cincy Red Bike, all the respondents knew the Cincy Red Bike though only one student had tried the service. In the question that asked if the Cincy Red Bike gives positive or negative emotions, they mostly had a positive impression about the Bike. In the next question that asks to circle a face expression that they would make when they see the Bike, most participants circled on the slight smile. Though five of them agreed that riding the Bike would be fun for them, only three of them wanted to join the service.

In the second section about Funamigo, they were asked to rate their emotions on Funamigo between negative and positive. The result was positive. They mostly circled a big smile. All of them agreed that riding the Cincy Red Bike with Funamigo would be fun with four strong agreements. Go to Appendix 8-3.

The third section asked about the Funamigo experience with the Cincy Red Bike. The same question that rated either positive or negative resulted in positive.

The first set of questions was about a function of Funamigo that talks to the user. Four of them strongly agreed that a talking Funamigo lets them feel fun, two of them agreed and one respondent disagreed.

The second set of questions asked about customizing Funamigo. All of them agreed with

the question that a customized Funamigo makes them feel fun and pleasure with four strong agreements.

The third set of questions was to about playing music with Funamigo while riding the Bike. Seven of respondents strongly agreed with the idea that listening to music with Funamigo while biking would gives fun and pleasure to them.

The fourth set of question asked about fun and pleasure by different lighting effects associated with other functions. Two strongly agreed, four others agreed, one neither agreed nor disagreed and the other one strongly disagreed with lighting effects.

In the question that asked to circle a face expression, they smiled which is slightly closer to mild smile.

Lastly, two participants strongly agreed with the question that ***fun and pleasurable experience with Funamigo would encourage them to keep the membership***, five of them agreed and one neither agree nor disagree.

Visualized results of the test are in Appendix 8-4.

Comparative Analysis

The results confirmed not only the hypothesis of this thesis, but also provided interesting insights and feedback from the participants.

First of all, it was confirmed ***the participants felt the Cincy Red Bike to be more fun with Funamigo than with the current service, and it motivated them to***

be willing to use and join the service when comparing results from the first and the second sections. This result also confirmed the hypothesis that a fun product will motivate UC students to use the Cincy Red Bike and join a membership.

Moreover, the same number of respondents who were willing to join the Cincy Red Bike with Funamigo agreed that Funamigo experiences for fun and pleasure during the redesigned biking experience highly encouraged them to sustain the ridership. This response supports the second hypothesis that a product relationship between Funamigo and a user through functions and interactions causes more pleasurable emotions, potentially allowing him or her to sustain the membership.

The analysis of fun and pleasure of Funamigo experience is shown in graphical form in Appendix 8-5.

Chapter 6

CONCLUSION

As results of user testing, the first hypothesis of the thesis that a fun product, Funamigo motivates UC students to use the Cincy Red Bike and join a membership was confirmed. Also, the second hypothesis that a relationship between Funamigo and a user through functions and interactions gives pleasurable emotions more, potentially allowing him or her to sustain the ridership was also confirmed. **Self-identity** by having Funamigo, which is one of comments, encourages UC students to feel confidence and self-actualization that is the highest in the Maslow's hierarchy and gives the deepest pleasure.

I appreciated that participants smiled and laughed when they saw Funamigo. Smile is the strongest indicator that fun emotion has been evoked. I hoped they have fun and are excited while experiencing Funamigo.



Figure 31 The first two participants smiling with Funamigo and the Cincy Red Bike

Limitations

Though the user test resulted positively, it is necessary to have more participants to in order to have more accurate results. Also, sufficient time is required to fully experience Funamigo and accurately measure emotions. Moreover, the inclement weather acted as the biggest barrier for UC students to use the Cincy Red Bike, as well as for them to participate in the test.

Future Study

The next step will be to have sufficient time and subjects to test how much Funamigo actually evokes pleasure from the beginning and how well the mobile application supports a user to sustain the membership.

Also, giving a proposal of this thesis to the operator of the Cincy Red Bike and getting feedback from them will make the argument of this thesis more substantial and reliable.

In terms of aesthetics: color and material studies will follow. Finding a color scheme for the Funamigo body that is the most harmonious for all the Funamigo personalities will be a next step.

REFERENCE AND BIBLIOGRAPHY

Alta Planning + Design. "Cincinnati Bike Share Feasibility Study". Accessed February, 28, 2008.
<http://www.cincinnati-oh.gov/bikes/linkservid/241025ED-EFF8-8292-8C6AC74C67C3F7FA/showMeta/o/>

Blythe, Mark A., Kees Overbeeke, Andrew F. Monk, and Peter C. Wright, eds. *Funology: from usability to enjoyment*. Vol. 3. Springer Science & Business Media, 2004.

Coelho, Denis A., and Sven Dahlman. "Do People Seek Pleasurable Products? A Questionnaire Study Shows the Relevance of Designing for Pleasure." *Design Principles & Practice: An International Journal* 5, no. 5 (2011).

Csikszentmihalyi, Mihaly. *Flow: The Psychology of Optimal Experience*. New York: Harper & Row, 1990.

Desmet, P., and Dijkhuis, E. *Wheelchair can be Fun: A Case of Emotion-driven Design*, DPPI '03 Proceedings of the 2003 international conference on Designing pleasurable products and interfaces. New York, 2004.

Fredrickson, Barbara L. "What good are positive emotions?." *Review of general psychology* 2, no. 3 (1998): 300.

Fromm, Jeff, and Christie Garton. *Marketing to Millennial: reach the largest and most influential generation of consumers ever*. AMACOM Div American Mgmt Assn, 2013.

Green, W. S., and Jordan, Patrick W. *Pleasure with Products: Beyond Usability*. London: Taylor & Francis, 2002

Holbrook, M. B. "The Millennial Consumer In The Texts Of Our Times: Experience And Entertainment." *Journal of Macromarketing*: 178-92. 2000.

Isen, A. "An Influence Of Positive Affect On Decision Making In Complex Situations: Theoretical Issues With Practical Implications." Vol. 11 of *Journal of Consumer Psychology*, 75-85. 2001

Jordan, Patrick W. *Designing pleasurable products: An introduction to the new human factors*. CRC press, 2002.

Lamberton, Cait Poynor and Rose, Randall L. *When is Ours Better than Mine? A Framework for Understanding and Altering Participation in Commercial Sharing Systems* (January 2, 2012). *Journal of Marketing*, 2012

Lewis, Clive Staples. *The four loves*. Houghton Mifflin Harcourt, 1971.

Ljungblad, S. "OPENbike: The design craft of future bike sharing" Paper presented at the Crafting the future 10th European Academy of Design Conference, Gothenburg, Sweden, June, 2014.

Maslow, Abraham H. *Motivation and Personality*. 2d ed. New York: Harper & Row, 1970.

Monk, Andrew, Marc Hassenzahl, Mark Blythe, and Darren Reed. "Funology: designing enjoyment." In *CHI'02 Extended Abstracts on Human Factors in Computing Systems*, pp. 924-925. ACM, 2002.

Norman, Donald A. *Emotional Design: Why We Love (or Hate) Everyday Things*. New York: Basic Books, 2004.

Odom, W. "Personal Inventories:Toward Durable Human-Product relationship" paper presented at the CHI, Florence, Italy, 2008

Schmidhuber, J. *Formal Theory of Creativity, Fun, and Intrinsic Motivation (1990–2010)*. Vol 1. and Vol2 of Autonomous Mental Development, IEEE Transactions on , 2010

Sweeney, Richard. "Millennial behaviors and demographics." *Newark: New Jersey Institute of Technology*. Accessed on 12, no. 3 (2006): 10.

Snyder, C. R. *Handbook of Positive Psychology*. Oxford [England: Oxford University Press, 2002.

Tiger, Lionel. *The Pursuit of Pleasure*. Boston: Little, Brown, 1992.

Wallenstein, Gene. *The Pleasure Instinct Why We Crave Adventure, Chocolate, Pheromones, and Music*. Hoboken: John Wiley & Sons, 2008.

Appendix

Appendix 1
Empirical Research Data

Appendix 1 - 1
Draw it out

How can you make this bike look fun?
How can you make cycling enjoyable?



How can you make this bike look fun?
How can you make cycling enjoyable?



How can you make this bike look fun?
How can you make cycling enjoyable?

PLEASE DRAW IT!



Copyright©Researcher Soojin Kim

- design
- sidecar

How can you make this bike look fun?
How can you make cycling enjoyable?

PLEASE DRAW IT!



Copyright©Researcher Soojin Kim

Balance b/twn
FUN VS. FUNCTIONAL
FUN VS. TACKY

FUN VS. DISTRACTING

Compliment
Safety
Weight
Lower

How can you make this bike look fun?
How can you make cycling enjoyable?



PLEASE DRAW IT!



How can you make this bike look fun?
How can you make cycling enjoyable?

Phone
Gadgets on handlebars



PLEASE DRAW IT!



Copyright © Researcher Soojin Kim

cruiser bikes

How can you make this bike look fun?
How can you make cycling enjoyable?

PLEASE DRAW IT!



How can you make this bike look fun?
How can you make cycling enjoyable?

PLEASE DRAW IT!



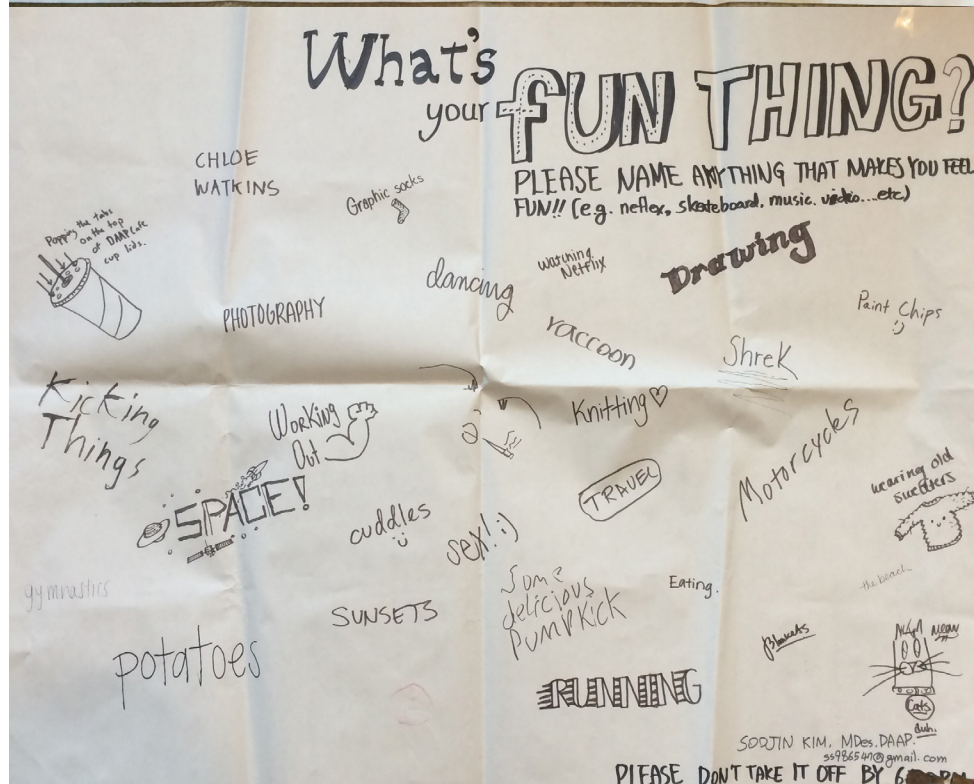
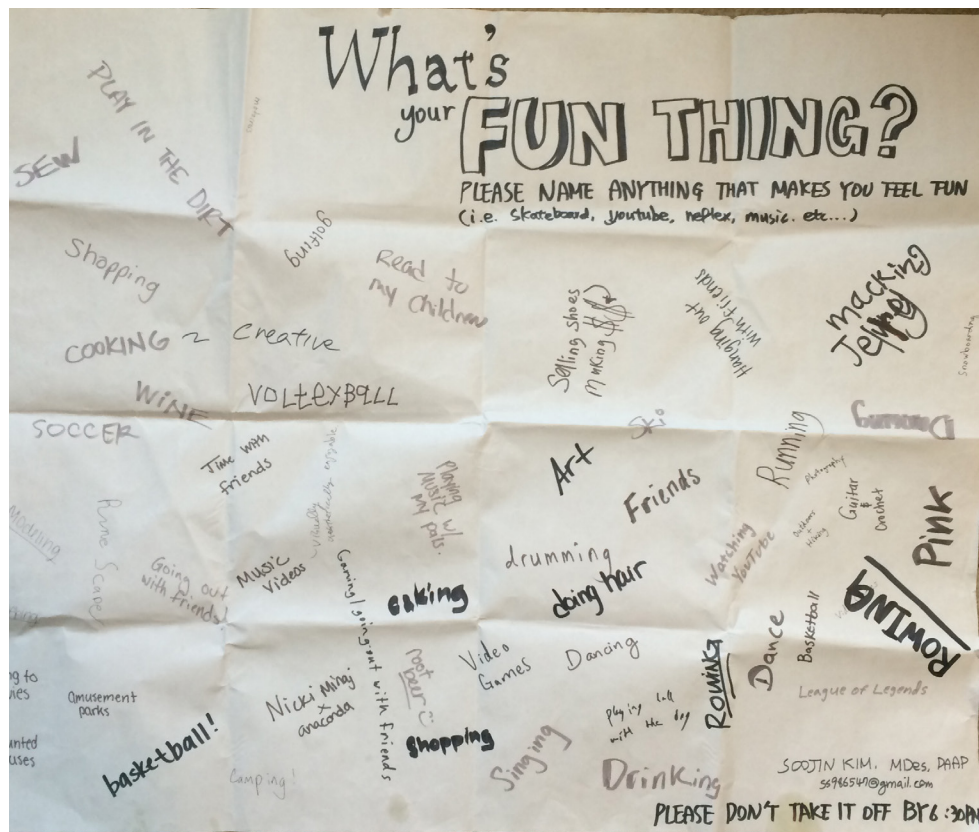
How can you make this bike look fun?
How can you make cycling enjoyable?

PLEASE DRAW IT!



Appendix 1-2

Graffiti walls



Appendix 1-3

Corresponding diagram

Graffiti wall

SOO JIN KIM
DESIGN CRITERIA

Interview

UC millennial 6

X watching TV shows
has job working either home works
Get together friends
Just related to my interest
I save money to buy a new used car
I love to see what's new stuff out there
Car racing programs.

How different subjects practice trying to get better
I love to see what's new stuff out there
I love to see what's new stuff out there
I love to see what's new stuff out there

UC millennial 7

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 8

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 9

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 10

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 11

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 12

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 13

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 14

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 15

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 16

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 17

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 18

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 19

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 20

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 21

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 22

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 23

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 24

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 25

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

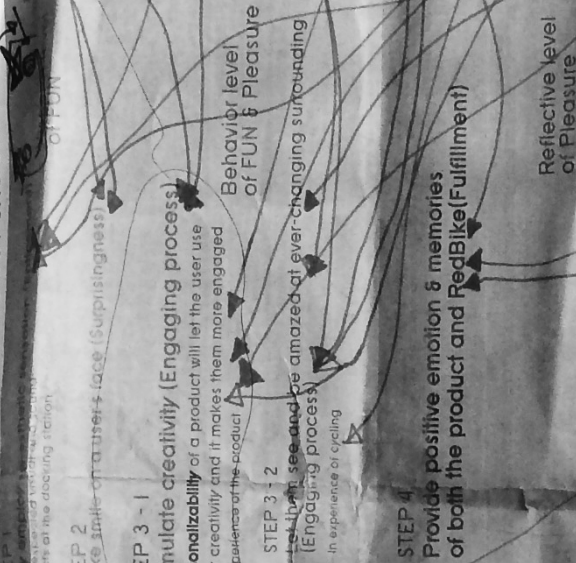
UC millennial 26

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

UC millennial 27

watching unexpected taking pop culture
simpsons pop culture references always fun
put something on other people's shoulders
put something on other people's shoulders

HOW THE PRODUCT SHOULD BE?

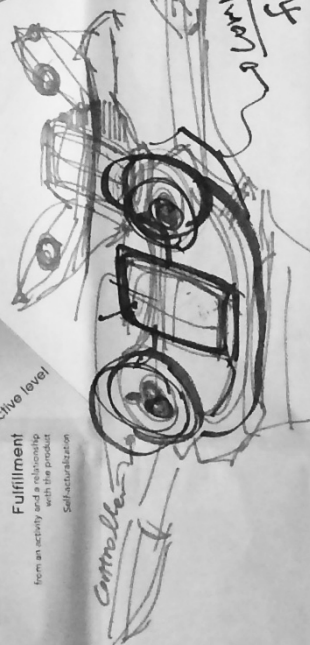


Mate Ramirez

Jami Peets

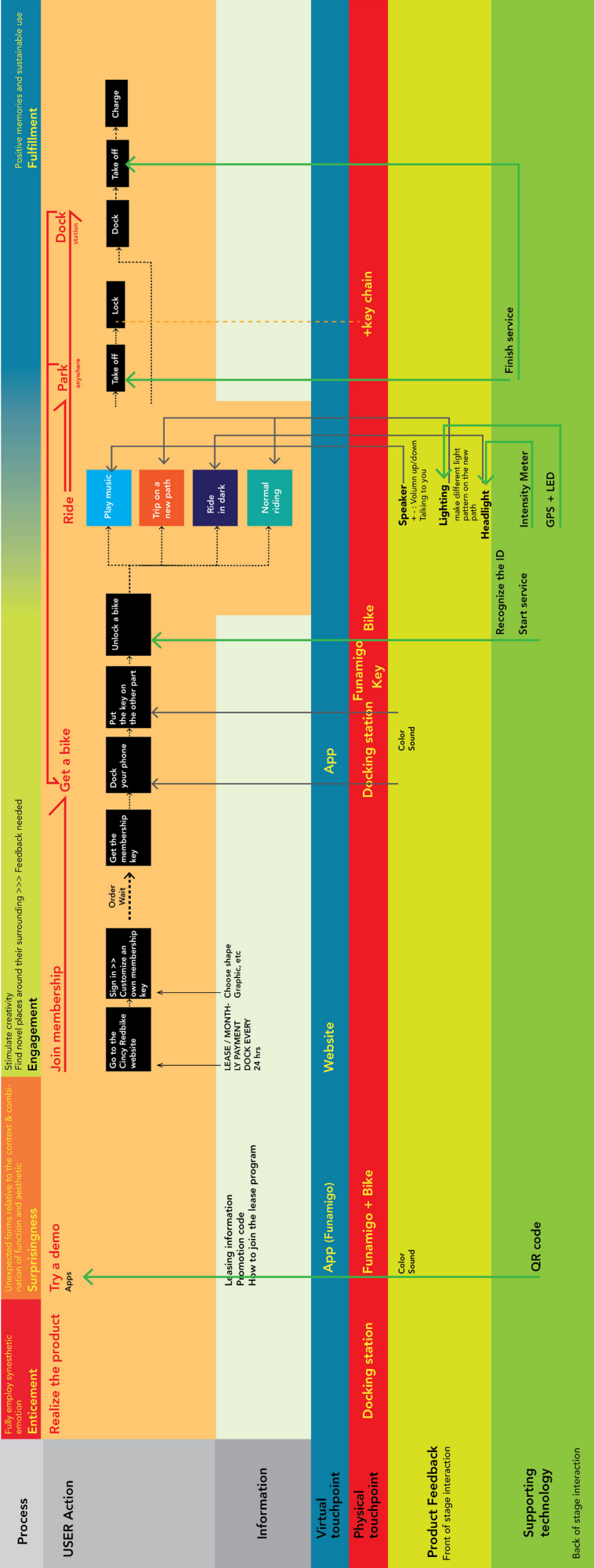
But it was fun to be able to around the block and racing
my friends. I lived in a gated community so we didn't
have the problem of riding onto an open street. It was just
parks and neighborhood streets
I think it has been the same reason I go to light trails
land if may sound stupid. Sorry or cheesy but the wind in
your face and the feeling of going FAST.
Also going out with my ride buddies was a super nice
because I got the chance to see places of the city I never
did before!

She first learned how to ride a bicycle when she was 8 years old and she rode
it again when she went to college because it's much faster than walking and
economically efficient than driving given parking lot and gas fee and also fun.
She loves getting fresh air in summer while cycling she said that's the best
moment and when she climbs up a hill she feels satisfied. She now has two
bikes for different purposes. One is for commuting and the other is really good
bike for leisure. When commuting, she brings her backpack, water bottle and a
little red alert light used when cloudy or rainy day. On the other hand she
brings a little computer that tells her how fast she's riding, total mile two cages
for water bottle and a tool kit in a pouch under the seat to repair tires. She has
taken her friends to try to ride a bike and they had fun with it. She said once try
it people know it's fun. She points out the fee of the daily pass and gives sug
gestion to remove barriers against using a sharing bike by giving coupons.
doing promotions or connecting with SNS. Other outdoor activities she's doing
for fun is to go on camping and to go to a concert with her friends. It seems she
really enjoys doing something with others. Design is very important! It depends
on what person is looking for. Walmart - bike shop. The nicer - the more com
plex, the more expensive. Bike lock ... She needs a water sults / Dr. Or
headphone!!!!



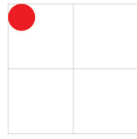
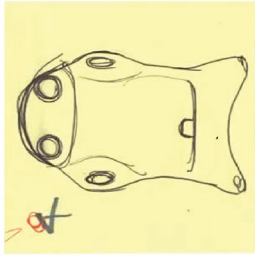
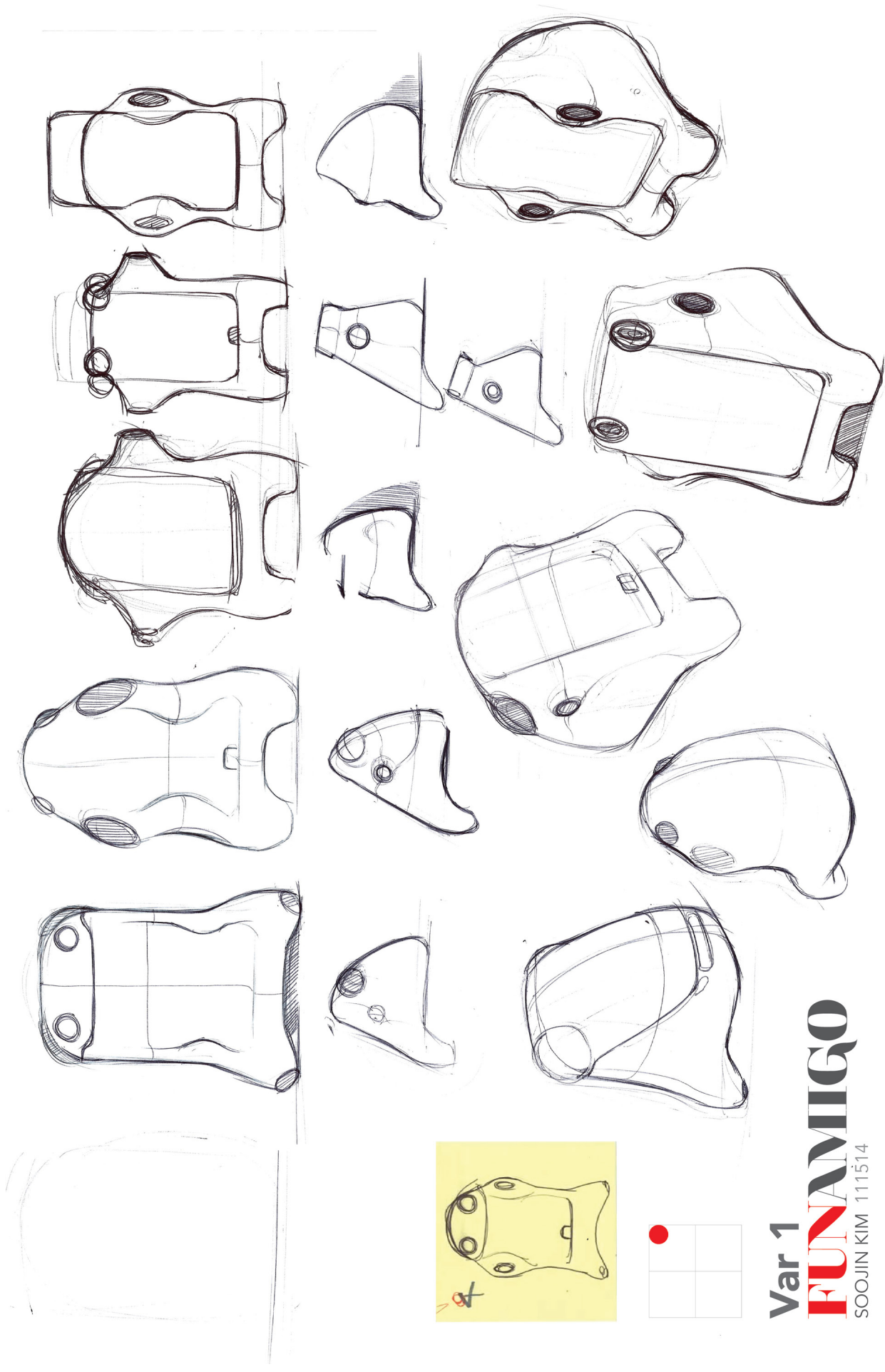
Appendix 2

The Workflow of Funamigo Service

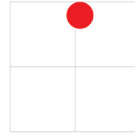
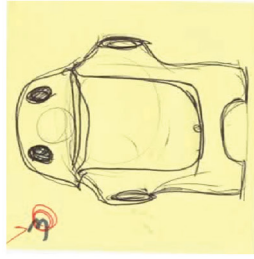


Appendix 3

Funamigo Design Concept Sketches

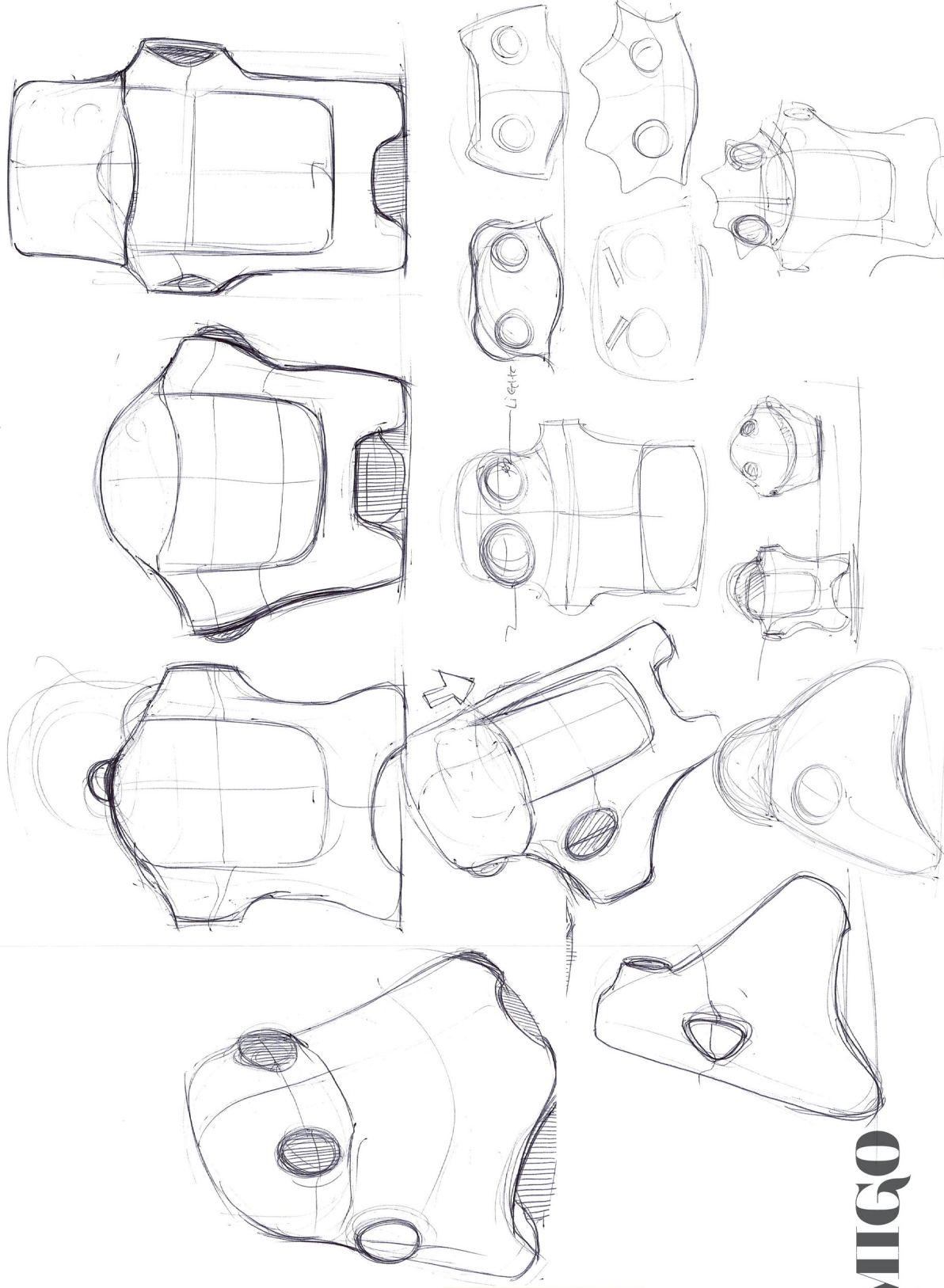


Var 1 **FUNAMIG0**
SOOJIN KIM 111514



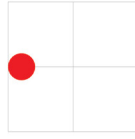
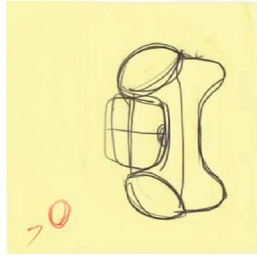
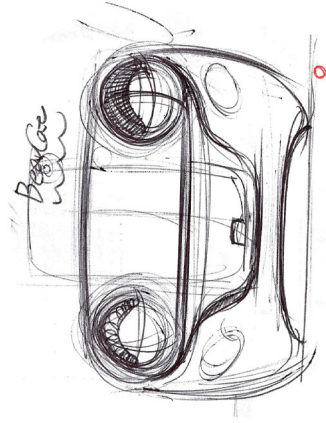
Var 2
FUNAMIGO
SOOJIN KIM 111514

SOOJIN KIM 111514

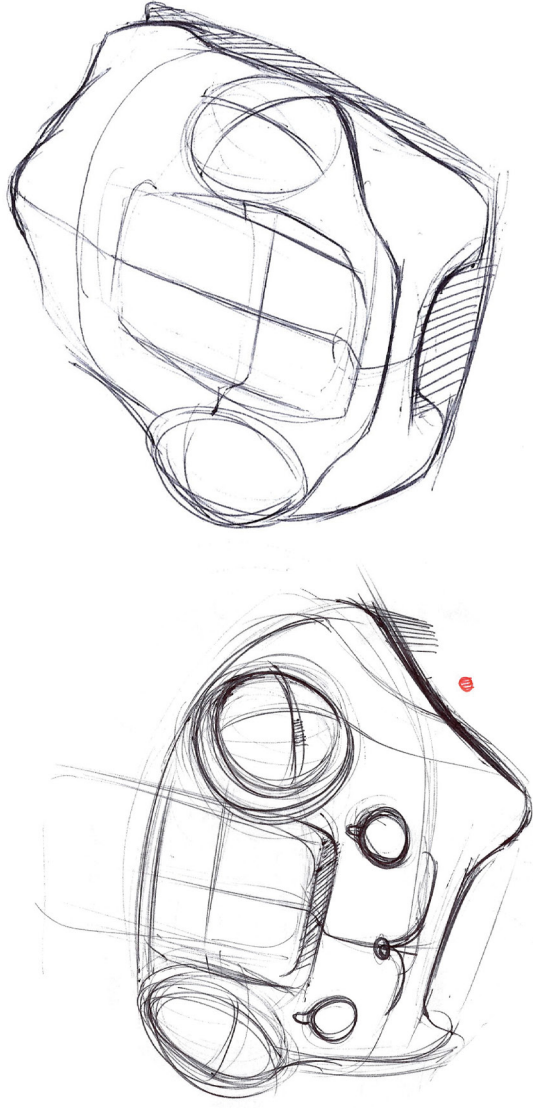
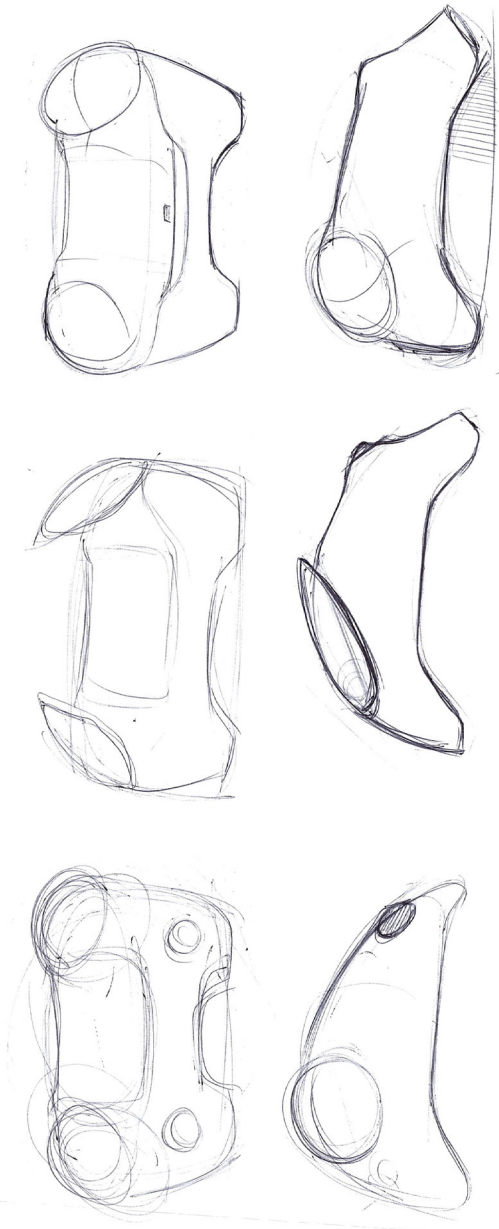


Appendix 3

Funamigo Design Concept Sketch

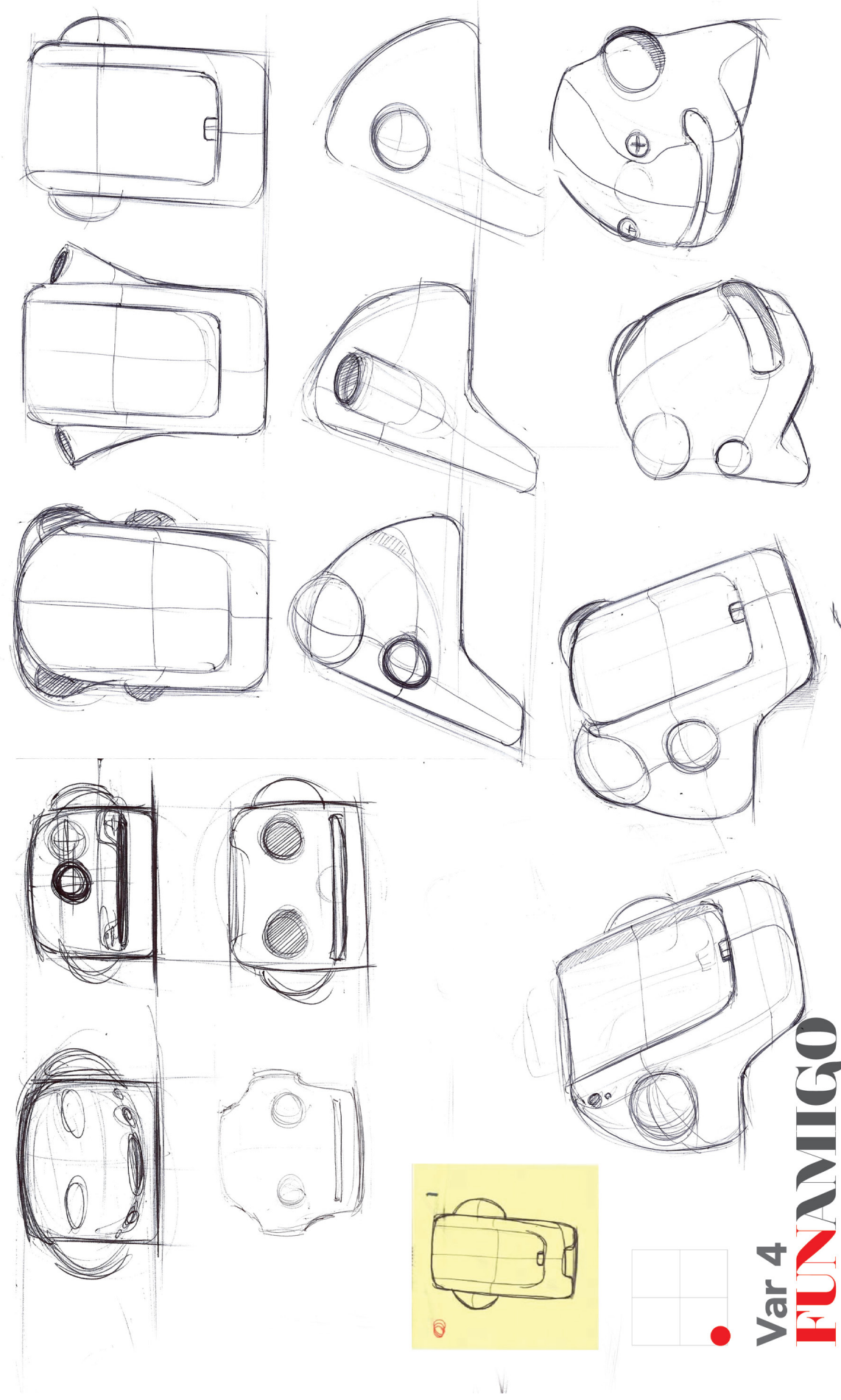


Var 3
FUNAMIGO
 SOOJIN KIM 111514



Appendix 3

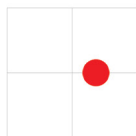
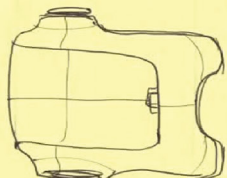
Funamigo Design Concept Sketch



Appendix 3
Funamigo Design Concept Sketch

Var 4
FUNAMIGO
SOOJIN KIM 111514

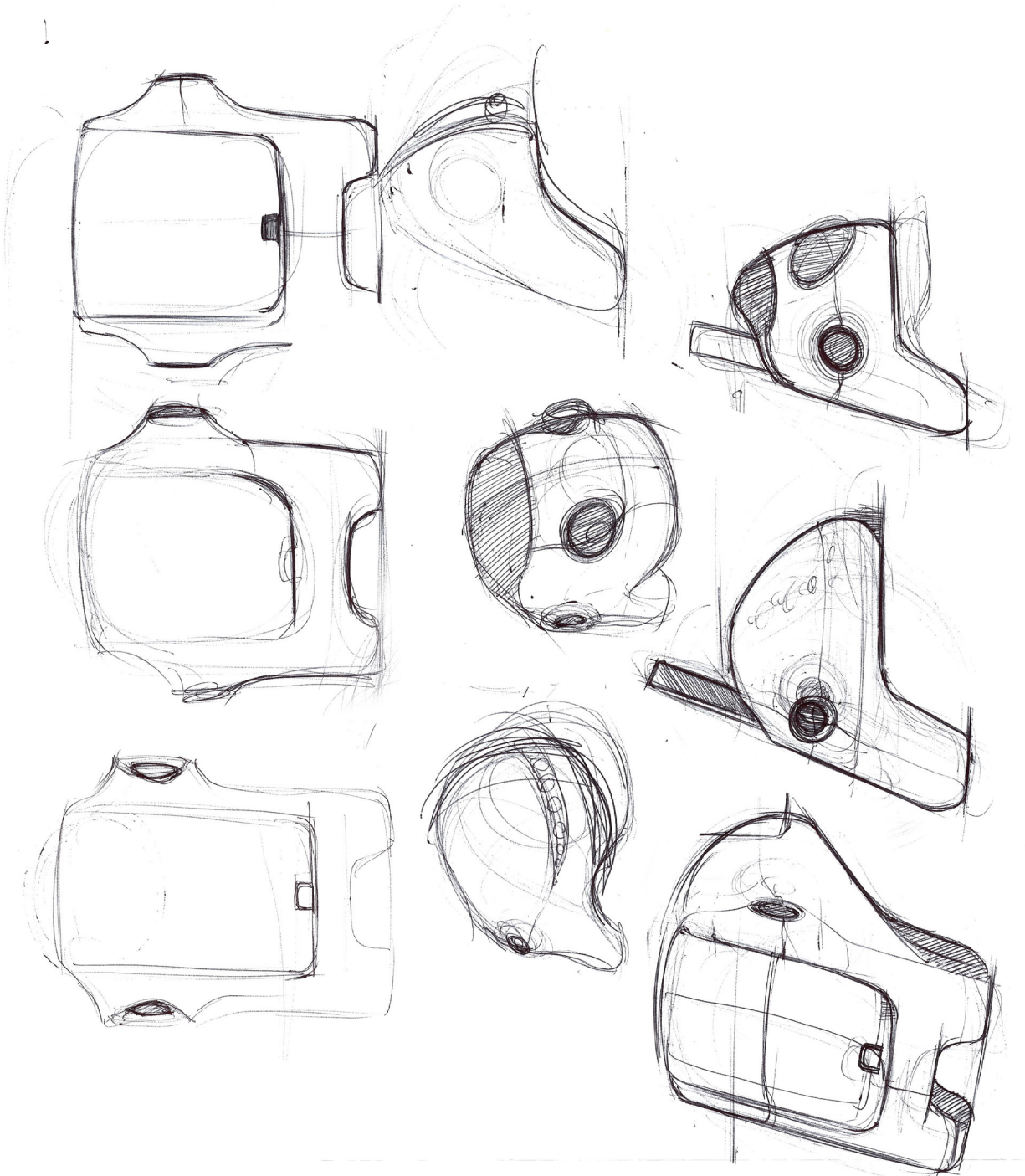
2

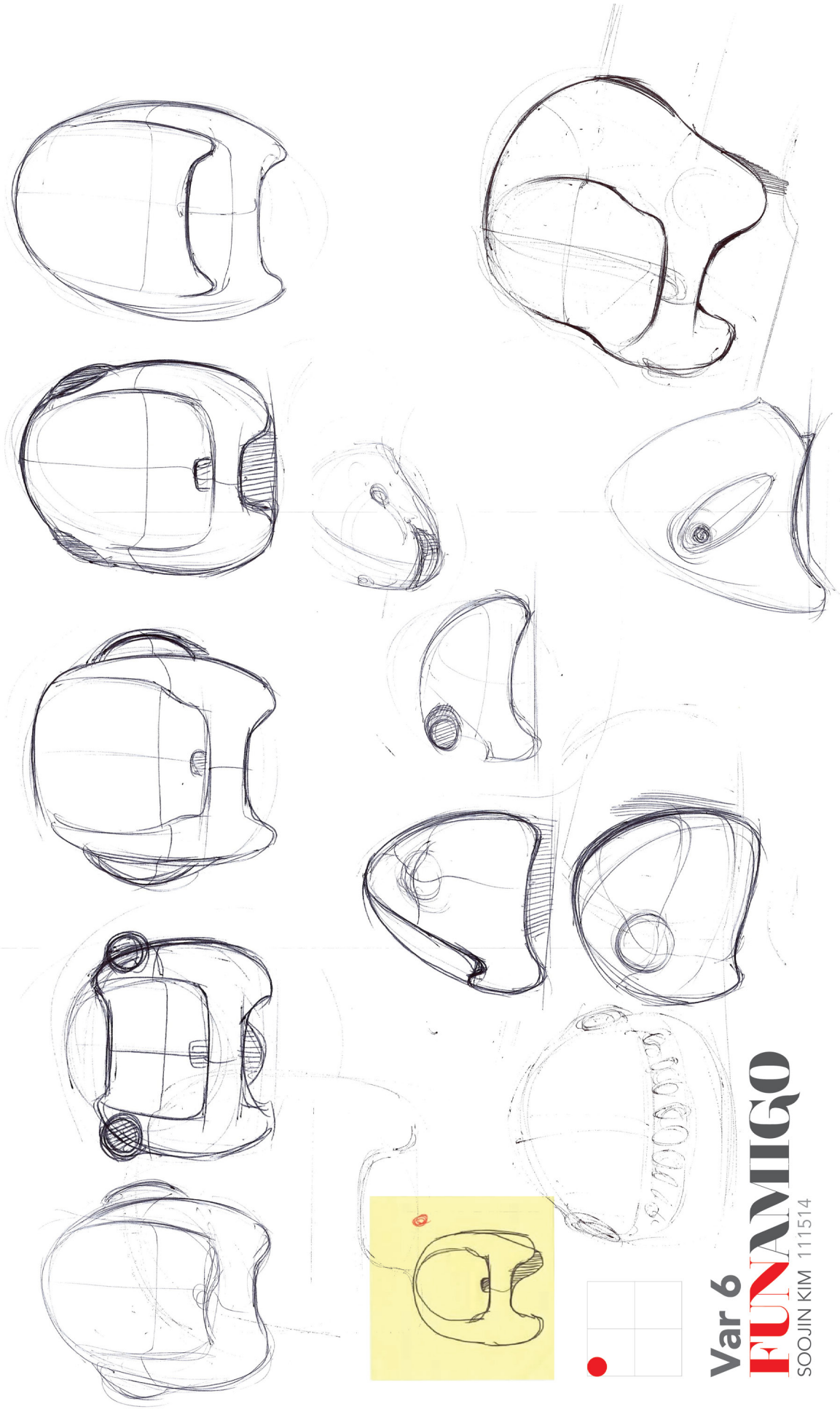


Var 5
FUNAMIGO
SOOJIN KIM 111514

Appendix 3

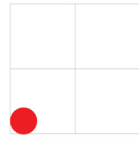
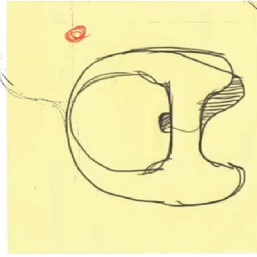
Funamigo Design Concept Sketch





Appendix 3

Funamigo Design Concept Sketch



Var 6
FUNAMIGO
SOOJIN KIM 111514

Appendix 4

Form Evaluation Survey Form

Form Evaluation Survey

Introduction

Thank you for your participation. You are invited to participate in this survey for evaluation of following forms you will see soon. Your valuable response will be used to develop a new enjoyable product named FUNAMIGO that makes you feel instant fun at a glance, potentially allowing you to have pleasurable experience with both the product and activities in which you would use the product.

Please select your gender.

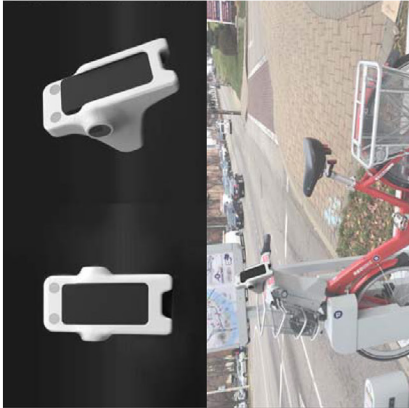
- ☐ Male
- ☐ Female

Please select your age range.

- ☐ 18~23
- ☐ 24~29
- ☐ 30~35
- ☐ 36~41
- ☐ 42~47

FORM A

These three images below all describe Form A. Please look at these carefully and answer following questions.



A-1 How much do you feel humor on this form? Please rate it on a scale of 1 to 10.

0

1

2

3

4

5

6

7

8

9

10

LESS

HUMOR

MORE

A-2 How much do you feel fun on this form? Please rate it on a scale of 1 to 10.

0

1

2

3

4

5

6

7

8

9

10

LESS

FUN

MORE

A-3 How much would you feel unexpectedness on this object in the context described at the bottom of the image group comparing with the context without the object. Please rate it on a scale of 1 to 10.

0

1

2

3

4

5

6

7

8

9

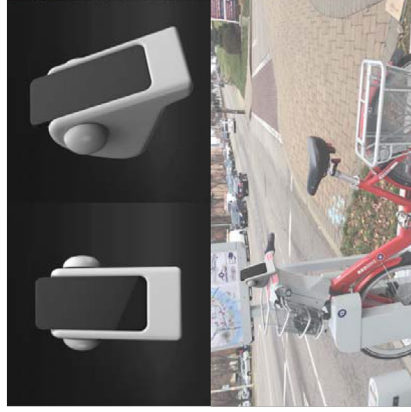
10

EXPECTED

UNEXPECTED

FORM B

These three images below all describe From B. Please look at these carefully and answer following questions.



B-1 How much do you feel humor on this form? Please rate it on a scale of 1 to 10.

B-2 How much do you feel fun on this form? Please rate it on a scale of 1 to 10.

B-3 How much would you feel unexpectedness on this object in the context described at the bottom of the image group comparing with the context without the object. Please rate it on a scale of 1 to 10.

Diagram illustrating a 1D lattice structure with 11 sites, numbered 0 to 10. The sites are arranged in a horizontal line, connected by bonds. The sites are labeled as follows:

- Site 0: EXPECTED
- Site 1: EXPECTED
- Site 2: EXPECTED
- Site 3: EXPECTED
- Site 4: EXPECTED
- Site 5: UNEXPECTED
- Site 6: UNEXPECTED
- Site 7: UNEXPECTED
- Site 8: UNEXPECTED
- Site 9: UNEXPECTED
- Site 10: UNEXPECTED

FORM C

These three images below all describe From C. Please look at these carefully and answer following questions.



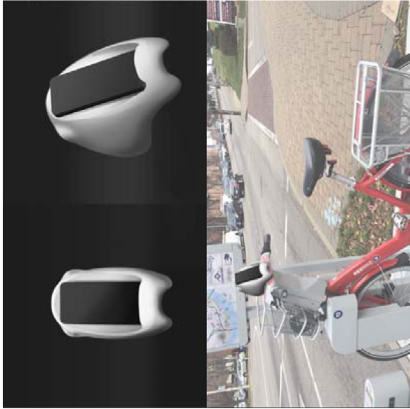
C-1 How much do you feel humor on this form? Please rate it on a scale of 1 to 10.

C-2 How much do you feel fun on this form? Please rate it on a scale of 1 to 10.

C-3 How much would you feel unexpectedness on this object in the context described at the bottom of the image group comparing with the context without the object. Please rate it on a scale of 1 to 10.

FORM D

These three images below all describe Form D. Please look at these carefully and answer following questions.



Preference

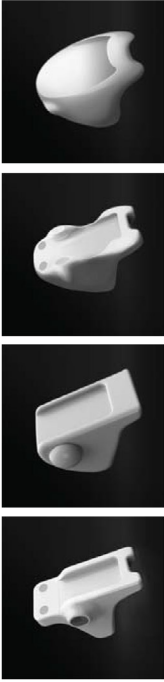
Please choose your preference.

☐ A

☐ B

☐ C

☐ D



Thank you for your participation :)

D-1 How much do you feel humor on this form? Please rate it on a scale of 1 to 10.

0

1

2

3

4

5

6

7

8

9

10

LESS

HUMOR

MORE

D-2 How much do you feel fun on this form? Please rate it on a scale of 1 to 10.

0

1

2

3

4

5

6

7

8

9

10

LESS

FUN

MORE

D-3 How much would you feel unexpectedness on this object in the context described at the bottom of the image group comparing with the context without the object. Please rate it on a scale of 1 to 10.

0

1

2

3

4

5

6

7

8

9

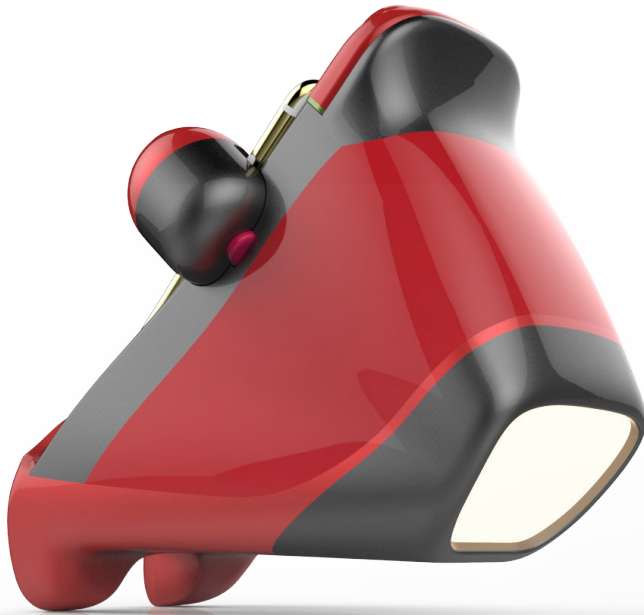
10

EXPECTED

UNEXPECTEDNESS

UNEXPECTED

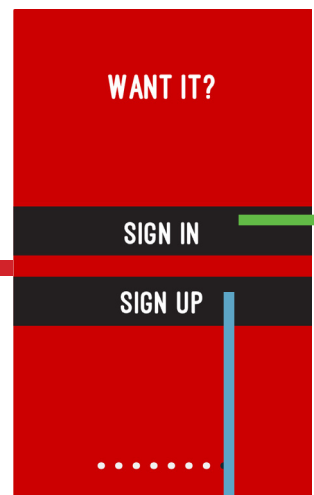
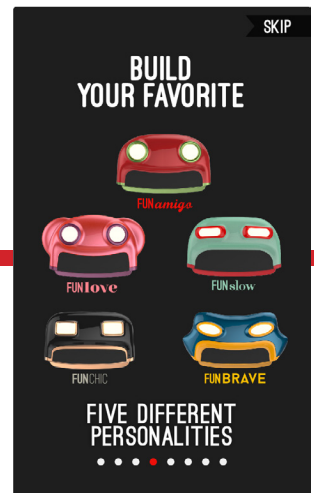
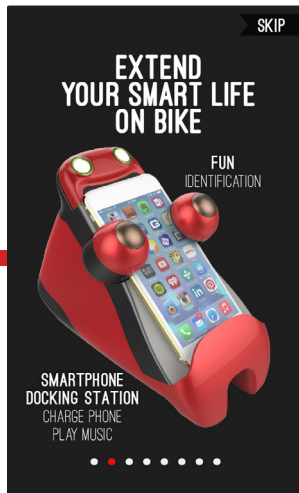
Appendix 5
The Final Design of Funamigo



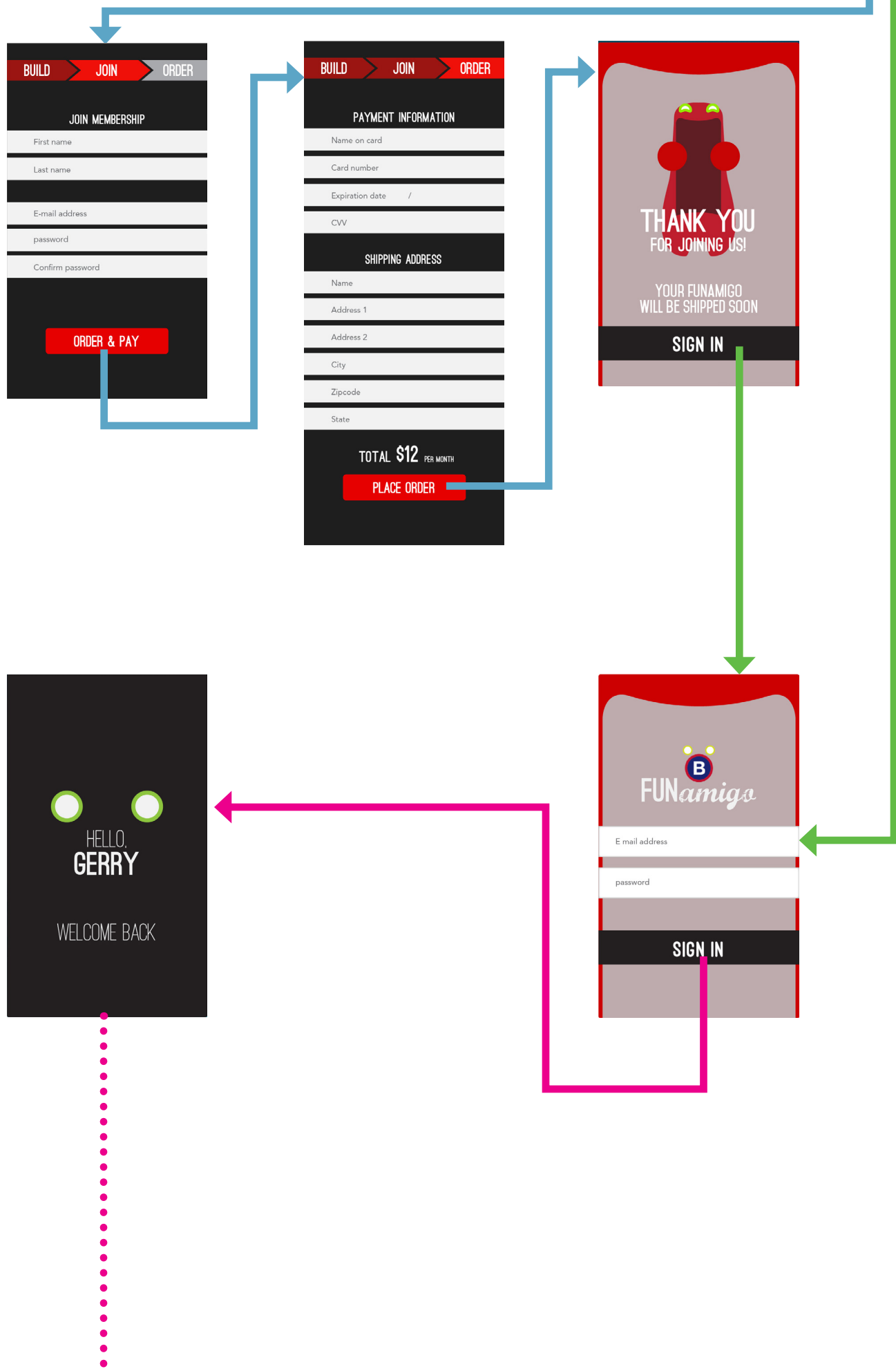


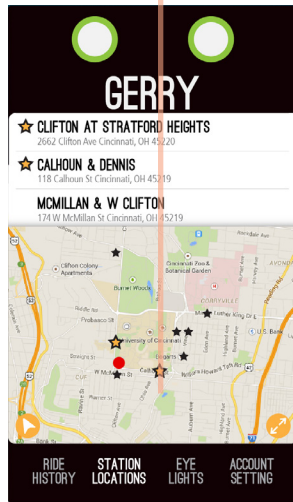
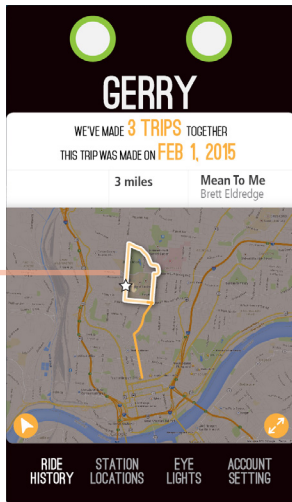
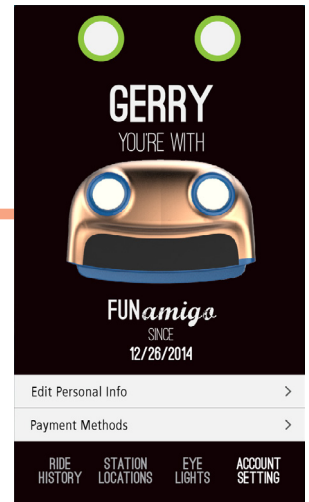
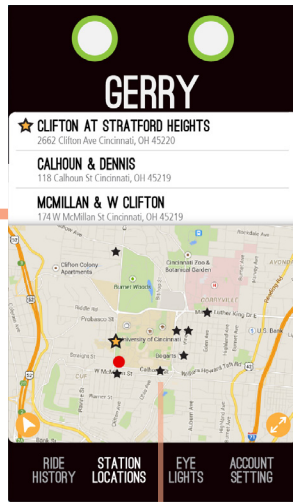
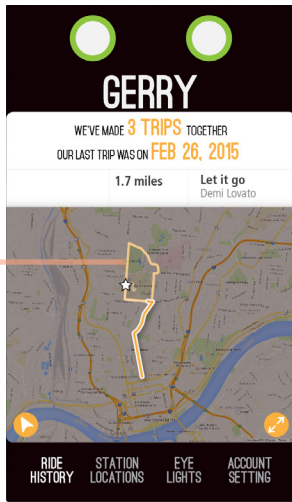
Appendix 6

The Final Design of Funamigo Mobile Application









Click

Double click

Rotate

Rotate

Appendix 7

Funamigo Experience Evaluation Test Survey Form

Evaluation Survey for Thesis Demonstration

Thank you for your participation. You are invited to participate in this survey for evaluating Funamigo for the Cincy Red Bike. Your valuable response will be used to demonstrate hypotheses that **1) a fun product motivates people to use the Cincy Red Bike and join a membership, 2) a product relationship between Funamigo and a user through functions and interactions has the user experience pleasurable emotions more, potentially allowing him or her to sustain the ridership.**

There are three sections; the first section is to ask your impression on the Red Bike. The second is to ask your impression and feeling on Funamigo and the Red Bike. Lastly, the third is to ask your feelings and willingness to sustain a ridership after experiencing Funamigo in person.

To be specific, You will be provided with a set of questions that simply asks about your impression on the Cincy Red Bike in the first section.

Secondly, you are asked with a set of questions about your impressions and feelings on Funamigo and how much it would encourage you to use the Cincy Red Bike after seeing Funamigo and being informed about functions and interactions of Funamigo.

The last is a set of questions that asks about how the experience changes your feeling and willingness to ride the Bike regularly after watching a scenario video and experiencing Funamigo in person.

Before beginning the survey, please answer these two questions.

Please choose your gender.

- ☐ Male
- ☐ Female

Please choose your age range.

- ☐ 18~23
- ☐ 24~29
- ☐ 30~35
- ☐ 36~41
- ☐ 42~47

Section 1 The Cincy Red Bike

In this section, you will answer with a set of questions that simply asks about your impression and feelings on the Cincy Red Bike so far. Please read questions carefully and answer.

1. Do you know the Cincy Red Bike?

☐ Yes

☐ No

If you check Yes, please answer question 2.

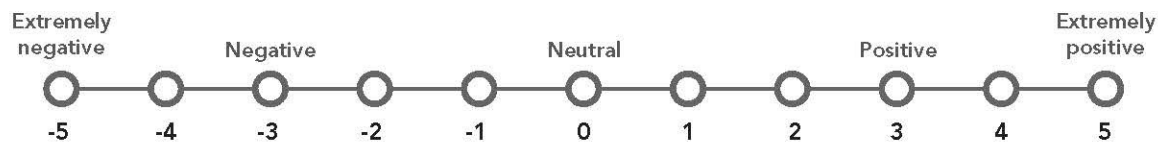
If you check No, please see the next page and read a brief introduction of the Cincy Red Bike and go to question 3 in this page.

2. Have you tried the Cincy Red Bike?

☐ Yes

☐ No

3. Does the Red Bike evoke positive emotions or negative emotions? Please rate it on a scale from -5 to 5.



4. How would you make a face expression when you see the Red Bike? Please choose one out of five expressions.



5. How far do you agree riding the Red Bike would be or was fun if you have tried the Cincy Red Bike?



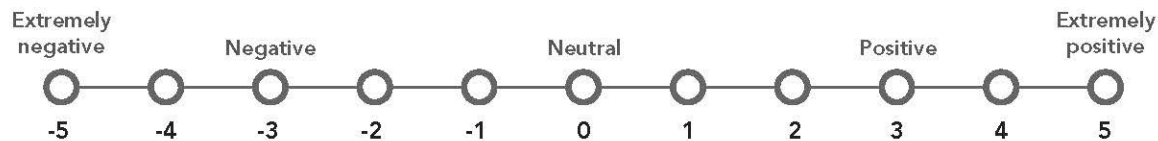
6. Are you interested in using the RedBike? Please check how far you agree or disagree with this question.



Section 2 Funamigo for The Cincy Red Bike -1

In this section, You will see Funamigo and be briefly explained about What is Funamigo and how it works. Then, you will answer with a set of questions about your impressions and feelings on Funamigo and how much it would encourage you to use the Cincy Red Bike.

1. Does Funamigo evoke positive emotions or negative emotions? Please rate it on a scale from -5 to 5.



2. How would you make a face expression when you see Funamigo? Please choose one out of five expressions.

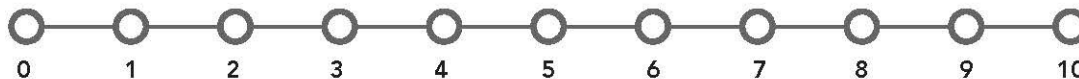


3. Please name any adjectives that expresses your emotions on Funamigo.

4-1. How far do you agree that riding the Red Bike with Funamigo would be fun?



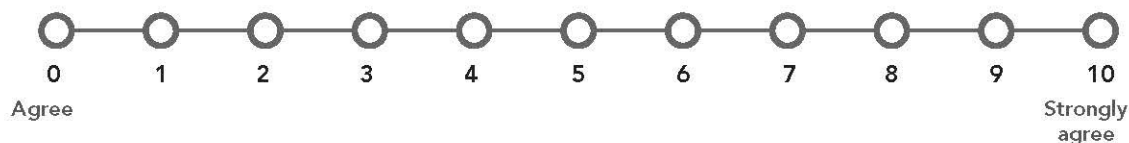
4-2. If you agree with question 4-1, how much would it fun to you?
Please rate it on scale from 0 to 10.



5-1, How far do you agree that Funamigo would motivate UC students to use the Cincy Red Bike?



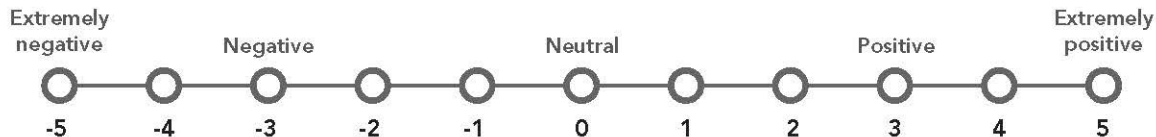
5-2, If you agree with question 5-1, how much would you agree with it? Please rate it on scale from 0 to 10.



Section 3 Cincy Red Bike associated with Funamigo experiences

In this section, you will watch a scenario video and experience some interactions of Funamigo and its mobile application. Then, you will be asked about how the experiences would change your feelings and expand and encourage you to ride the Bike regularly or use the service for a long time.

1. Does riding the Cincy Red Bike with Funamigo experience its functions evoke positive emotions or negative emotions? Please rate it on a scale from -5 to 5.



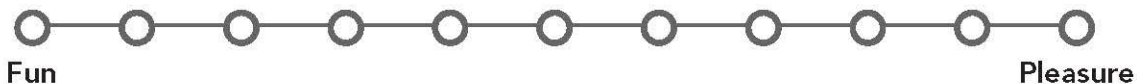
2-1 Do you agree that talking Funamigo would make you feel fun and pleasure?



2-2 If you agree with question 2-1, how much fun and pleasure would talking Funamigo be? Please rate from 0 to 10.



2-3 How is your emotion on talking Funamigo close to between fun and pleasure?



3-1 How far do you agree that having your customized Funamigo makes you feel fun and pleasure?



3-2 If you agree with question 3-1, how much fun and pleasure would talking Funamigo be? Please rate from 0 to 10.



3-3 How is your emotion on this experience close to between fun and pleasure?



Section 3 Cincy Red Bike associated with Funamigo experiences

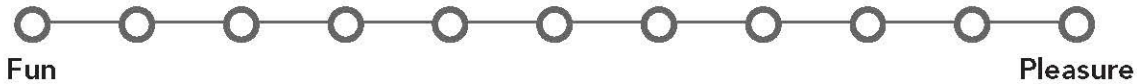
4-1 How far do you agree that listening to music through Funamigo while riding the Red Bike would give you more fun and pleasure?



4-2 If you agree with question 4-1, how much fun and pleasure would the experience be?
Please rate from 0 to 10.



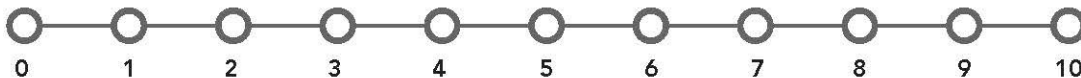
4-3 How is your emotion on the experience close to between fun and pleasure?



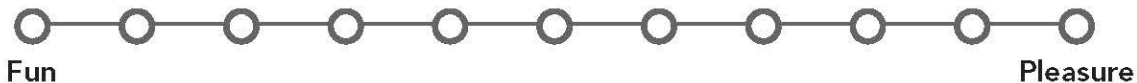
5-1 How far do you agree that different light effects depending on what you do and where you are while riding the Red bike would give you more fun and pleasure?



5-2 If you agree with question 5-1, how much fun and pleasure would the experience be?
Please rate from 0 to 10.

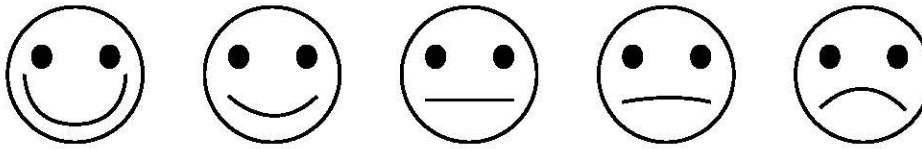


5-3 How is your emotion on the experience close to between fun and pleasure?



Section 3 Cincy Red Bike associated with Funamigo experiences

6. How would you make a face expression when you experience these functions of Funamigo while riding the Cincy Red Bike? Please choose one out of five expressions.

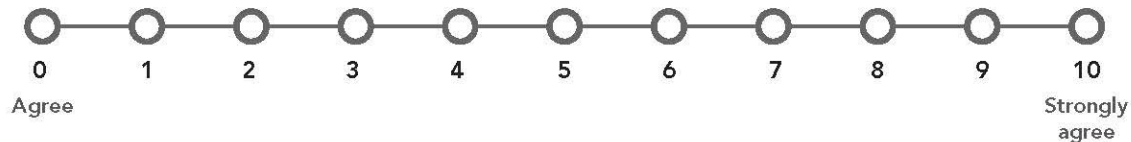


7. Please name any adjectives that express your emotions that you might feel throughout the experiences with Funamigo and Cincy Red Bike.

8-1 How far do you agree these experiences of Funamigo would make you keep having fun and pleasure while riding the Cincy Redbike and motivates you to keep your membership?



8-2, If you agree with question 5-1, how much would you agree with it? Please rate it on scale from 0 to 10.



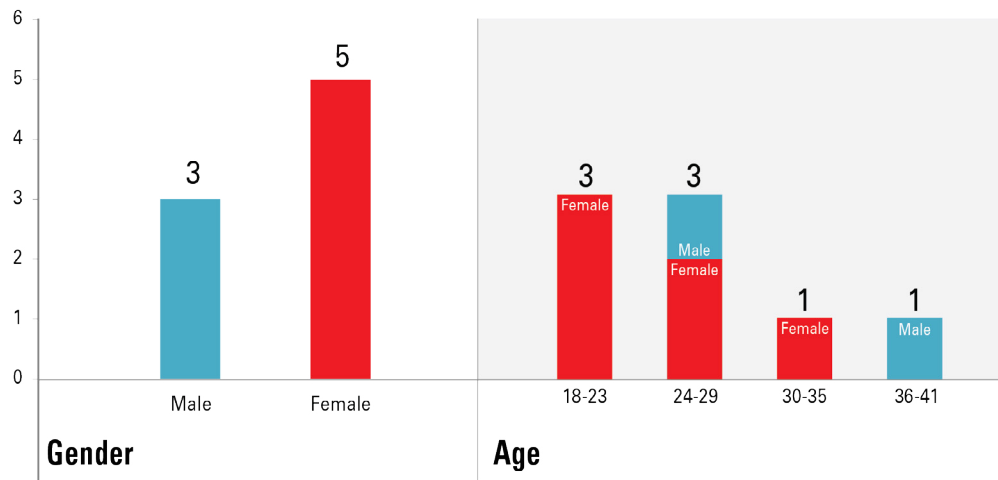
9. Please left a comment and feedback (Optional)

Thank you for your participation!

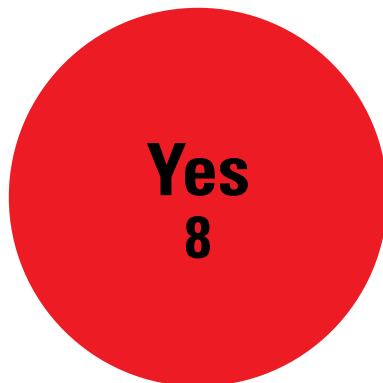
Appendix 8

Funamigo Experience Evaluation Test Results and Analysis

Appendix 8-1 Demographic of respondents

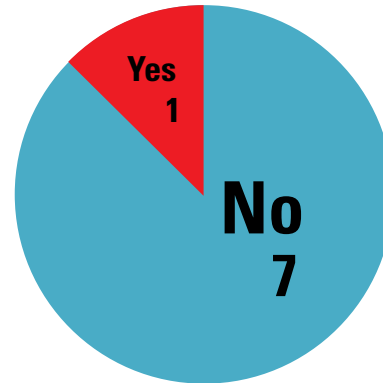


Appendix 8-2 Results from Section 1 The Cincy Red Bike



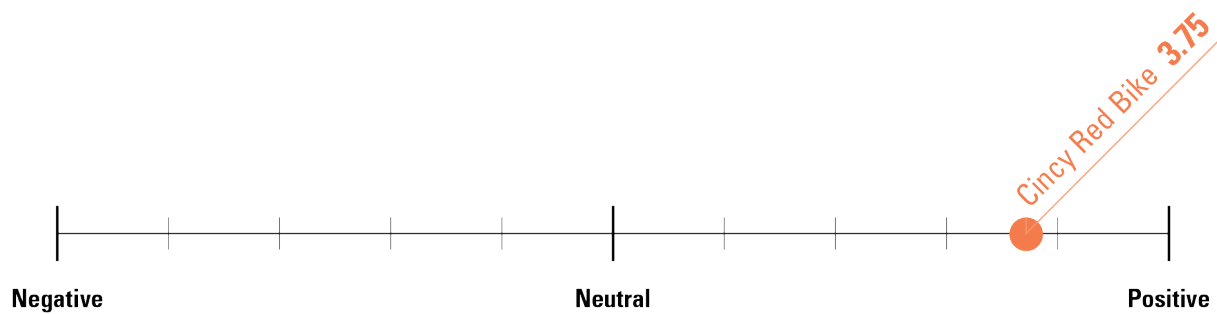
Do you know the Cincy Red Bike?

Appendix 8-2.1. The results of questions 1 asking about awareness of the Cincy Red Bike



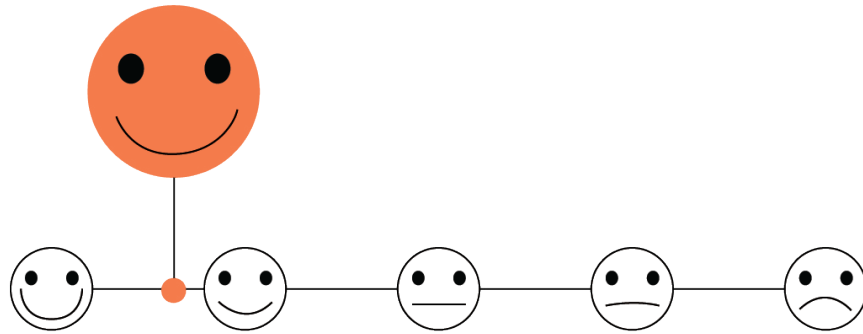
Have you tried the Cincy Red Bike?

Appendix 8-2.2. The results of questions 1 asking about a



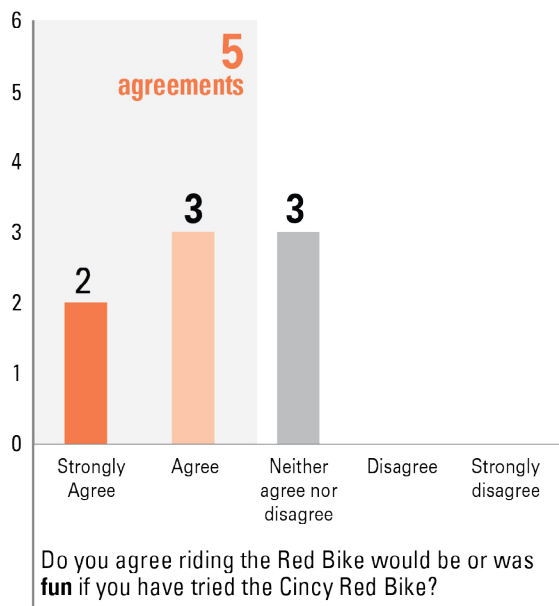
Does the Cincy Red Bike evoke positive emotions or negative emotions?
Please rate it on a scale from -5 to 5.

Appendix 8-2.3. The average rate of emotion derived from the Cincy Red Bike on the scale from question 3

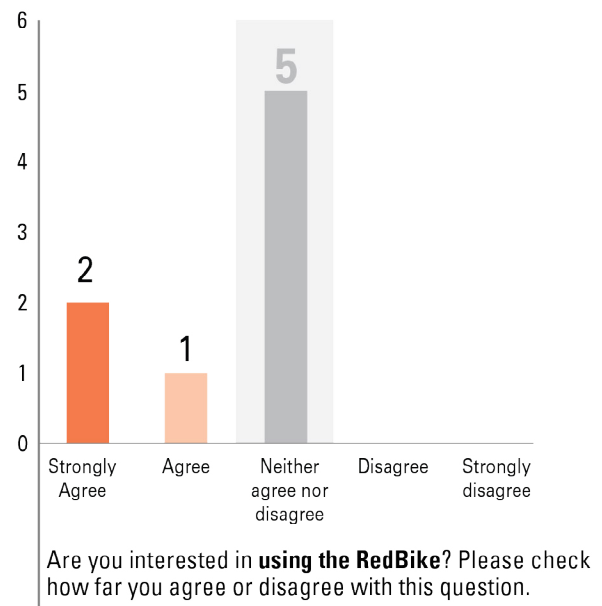


How would you make a face expression when you see the Red Bike?
Please choose one out of five expressions.

Appendix 8-2.4. The average face expression that respondents made when thinking of the Cincy Red Bike from question 4

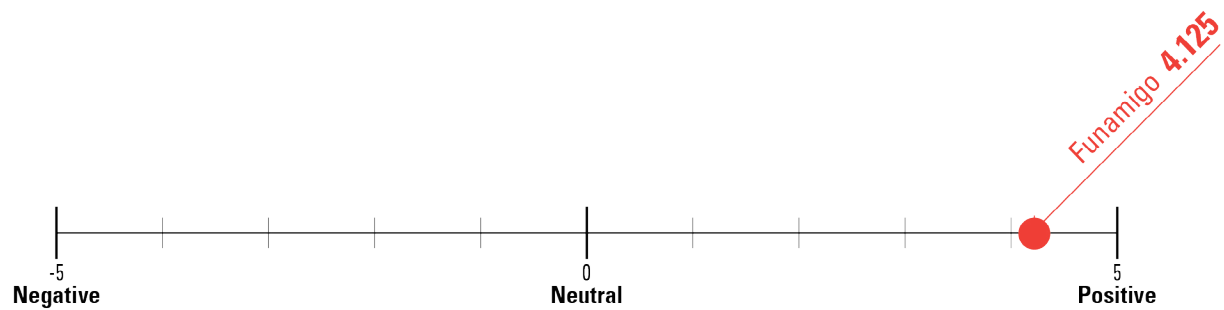


Appendix 8-2.5. A graph of results of question 5 asking if the Cincy Red Bike would be fun or was fun



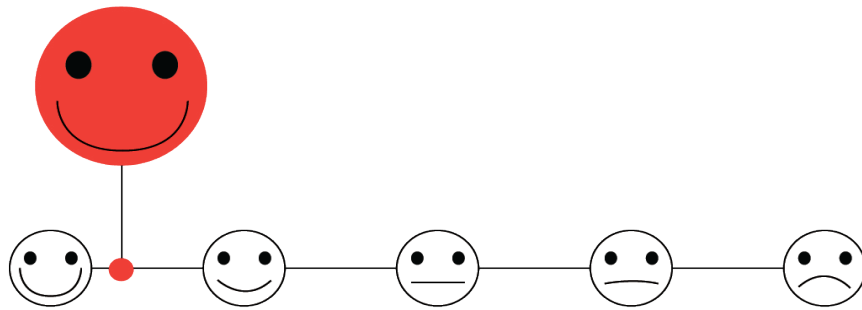
Appendix 8-2.6. A graph of the result of question 6 asking if they are interested in using the Red Bike or not

Appendix 8-3 Results from Section 2 The Funamigo with The Cincy Red Bike



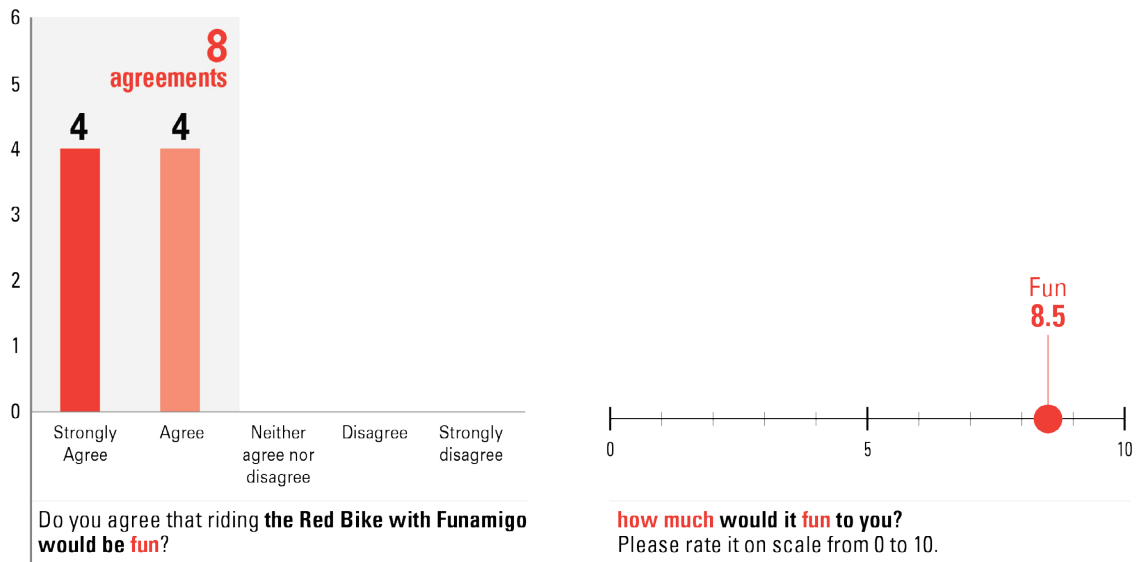
Does Funamigo evoke positive emotions or negative emotions? Please rate it on a scale from -5 to 5.

Appendix 8-3.1. The average rate of emotion derived from Funamigo on the scale from question 1



How would you make a face expression when you see Funamigo?
Please choose one out of five expressions.

Appendix 8-3.2. The average face expression that respondents made when thinking of the Cincy Red Bike
from question 2



Appendix 8-3.3. A graph of results of the question 4 asking if riding the Cincy Red Bike with Funamigo would be fun and a specific figure of rating the question on the scale

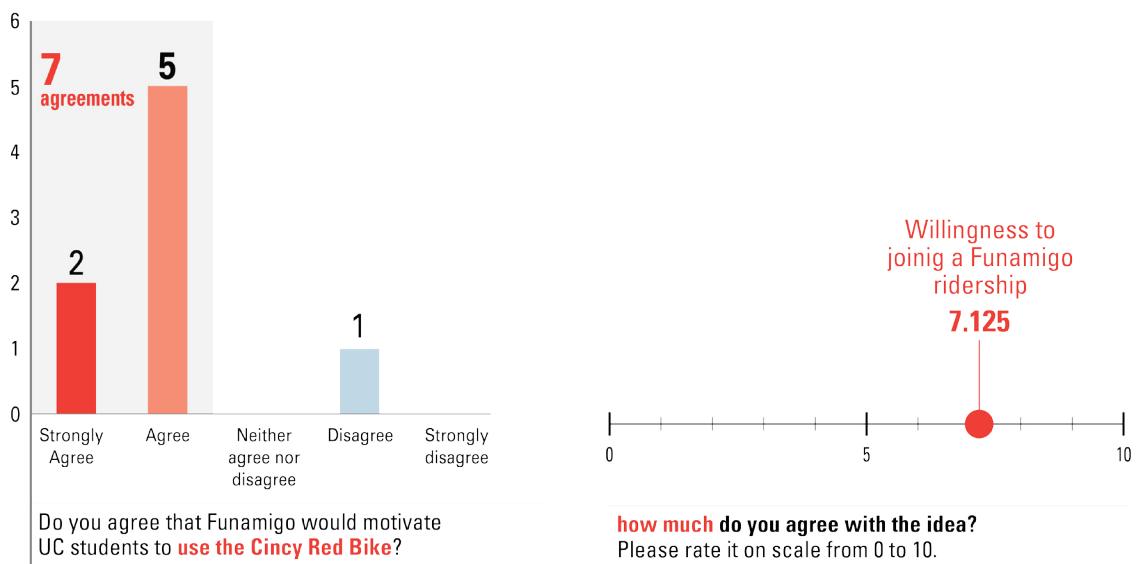
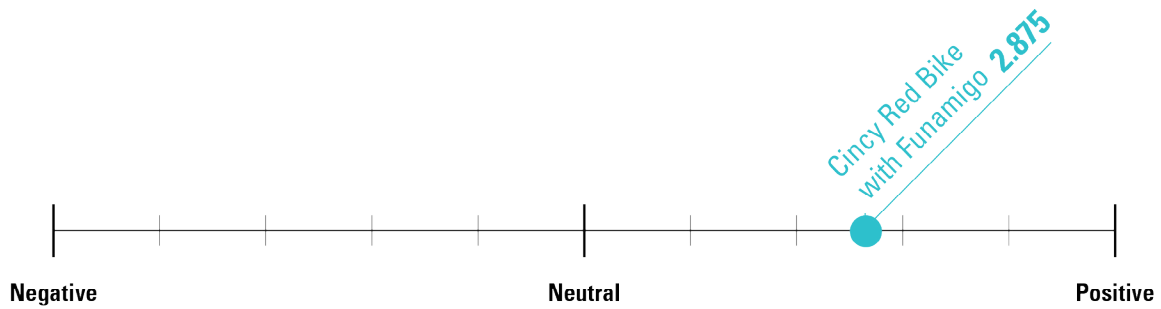


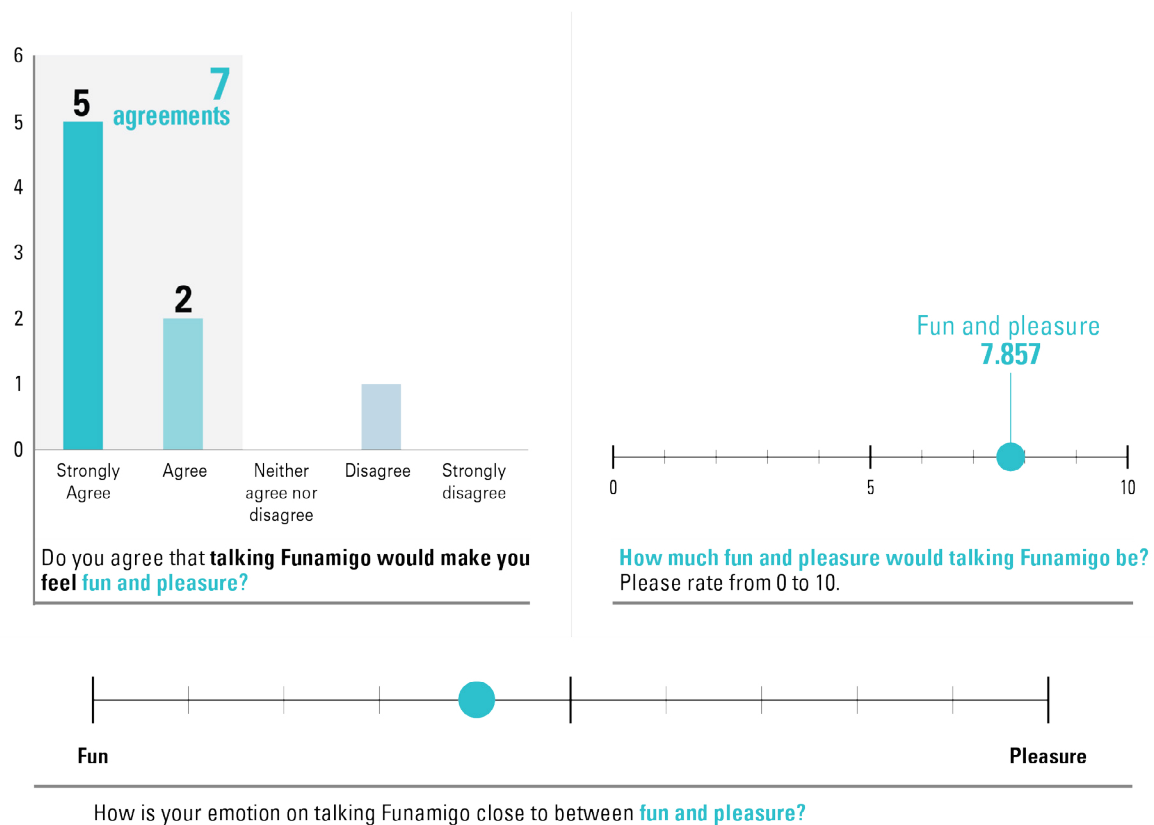
Figure 8-3.4. A graph of results of the question 5 asking if Funamigo would motivate UC students to use the Cincy Red Bike and a specific figure of rating the question on the scale

Appendix 8-4 Results from Section 2 The Cincy Red Bike with Funamigo Experiences

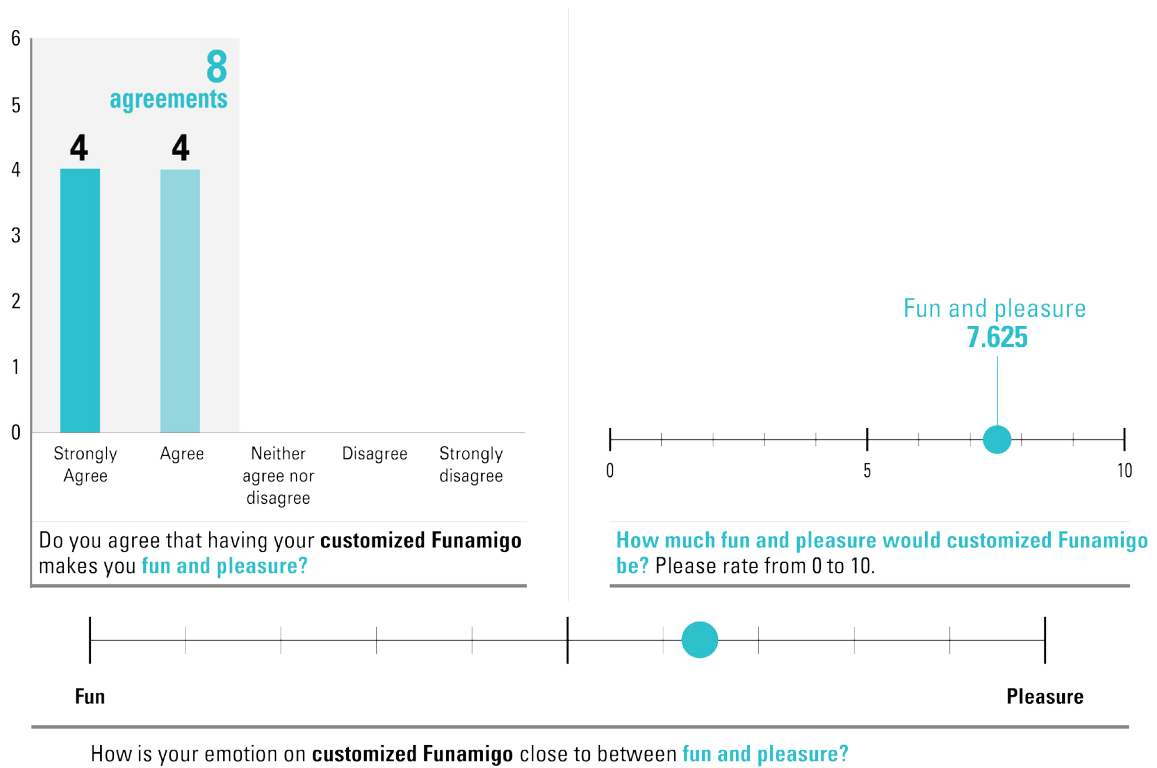


Does riding the Cincy Red Bike with Funamigo experience its functions evoke positive emotions or negative emotions? Please rate it on a scale from -5 to 5.

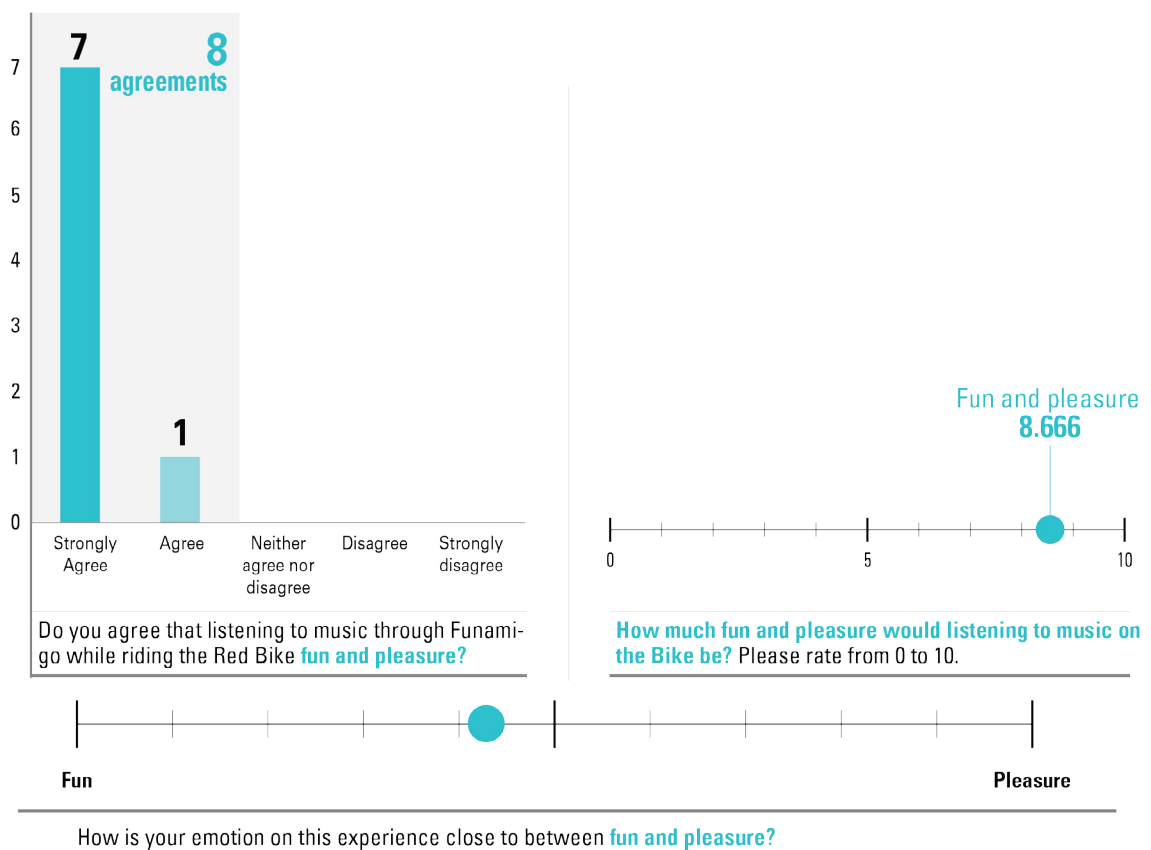
Appendix 8-4.1. The average rate of emotion derived from the Cincy Red Bike with Funamigo experience on the scale from question 1



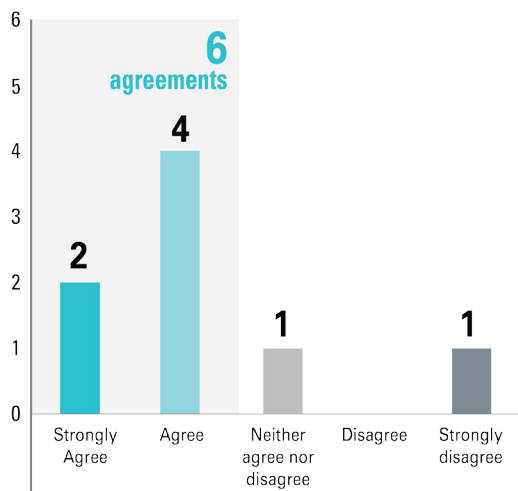
Appendix 8-4.2. Results of a set of question 2 in the third section in the questionnaire that asks emotions about a talking Funamigo



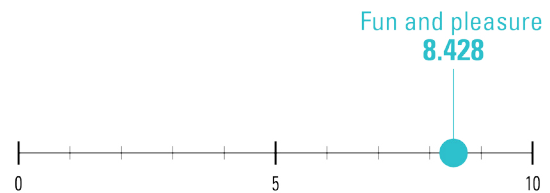
Appendix 8-4.3. Results of a set of question 3 in the third section in the questionnaire that asks emotions about customizing Funamigo



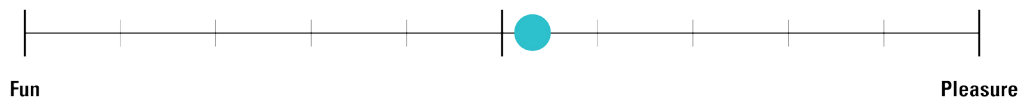
Appendix 8-4.4. Results of a set of question 4 in the third section in the questionnaire that asks emotions about listening to music through Funamigo while riding the Bike



Do you agree that **different light effects** depending on what you do and where you are while riding the Red Bike makes you **fun and pleasure**?

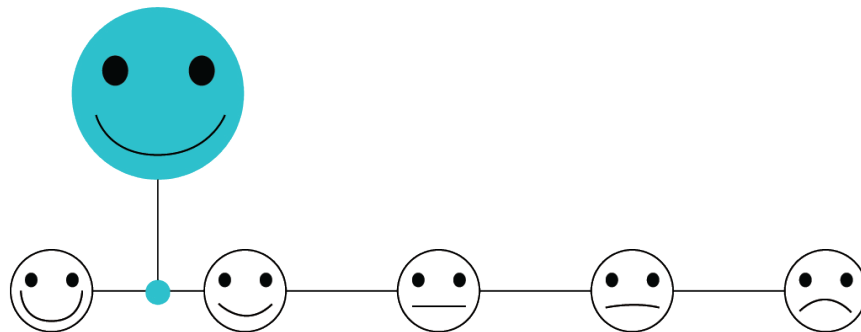


How much fun and pleasure would different light effects on the bike be? Please rate from 0 to 10.



How is your emotion on listening to music on the bike close to between **fun and pleasure**?

Appendix 8-4.5. Results of a set of question 5 in the third section in the questionnaire that asks emotions about different light effects associated with different functions of Funamigo



How would you make a face expression when you experience these functions of Funamigo while riding the Cincy Red Bike? Please choose one out of five expressions.

Appendix 8-4.6. The average face expression that respondents made after experiencing the Cincy Red Bike with Funamigo from question 6

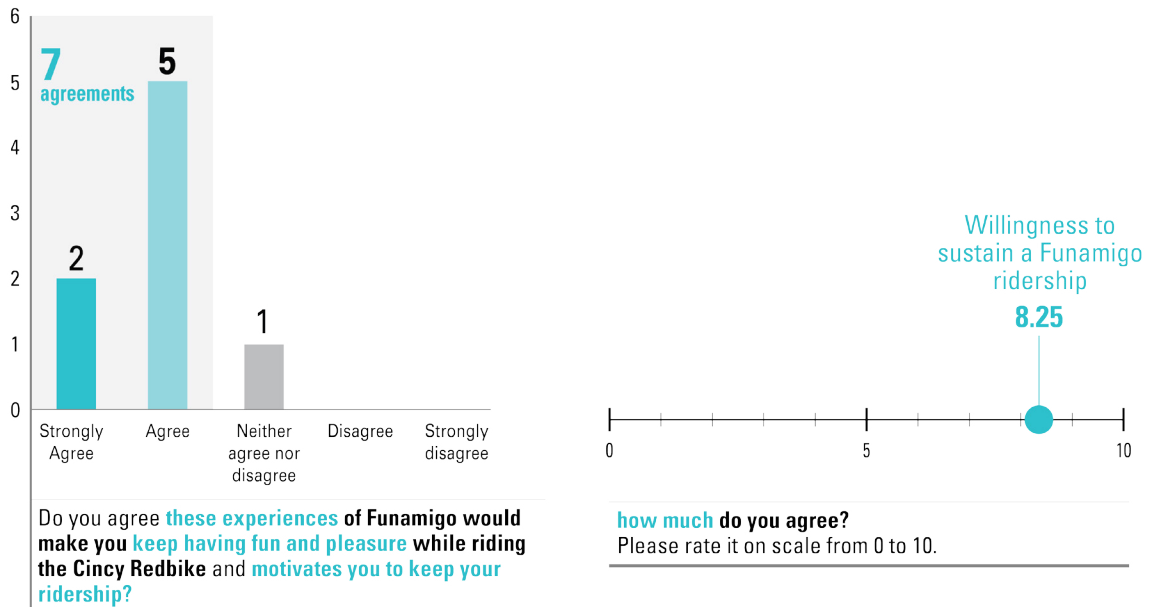
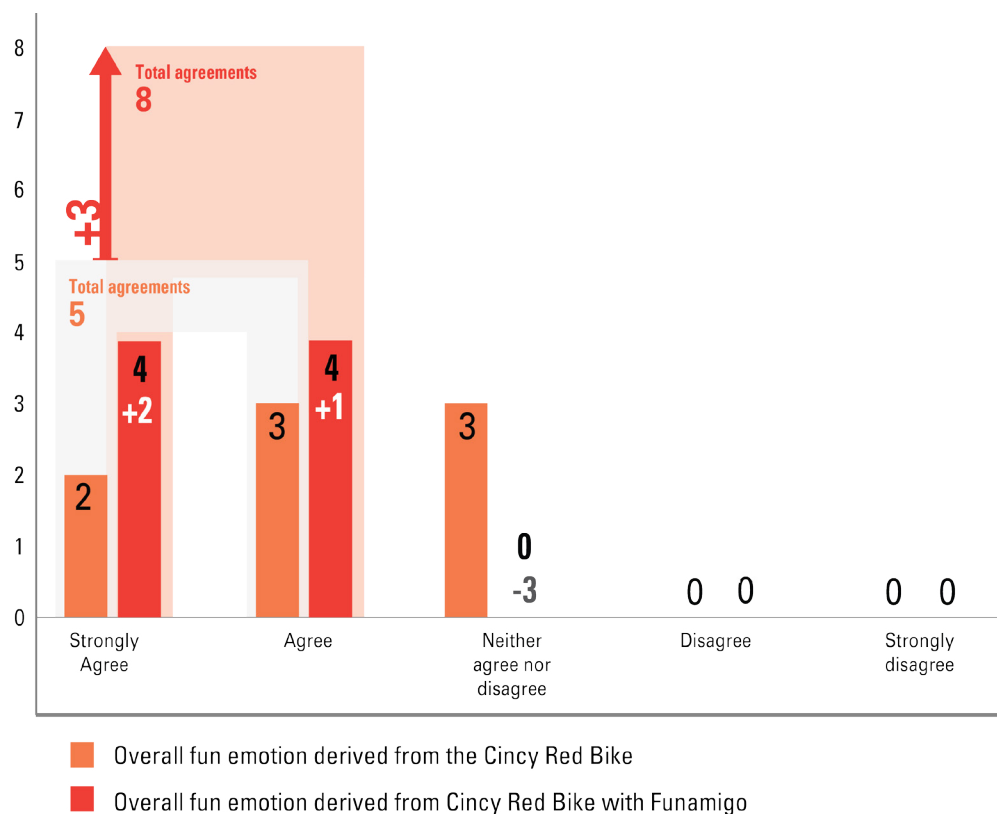


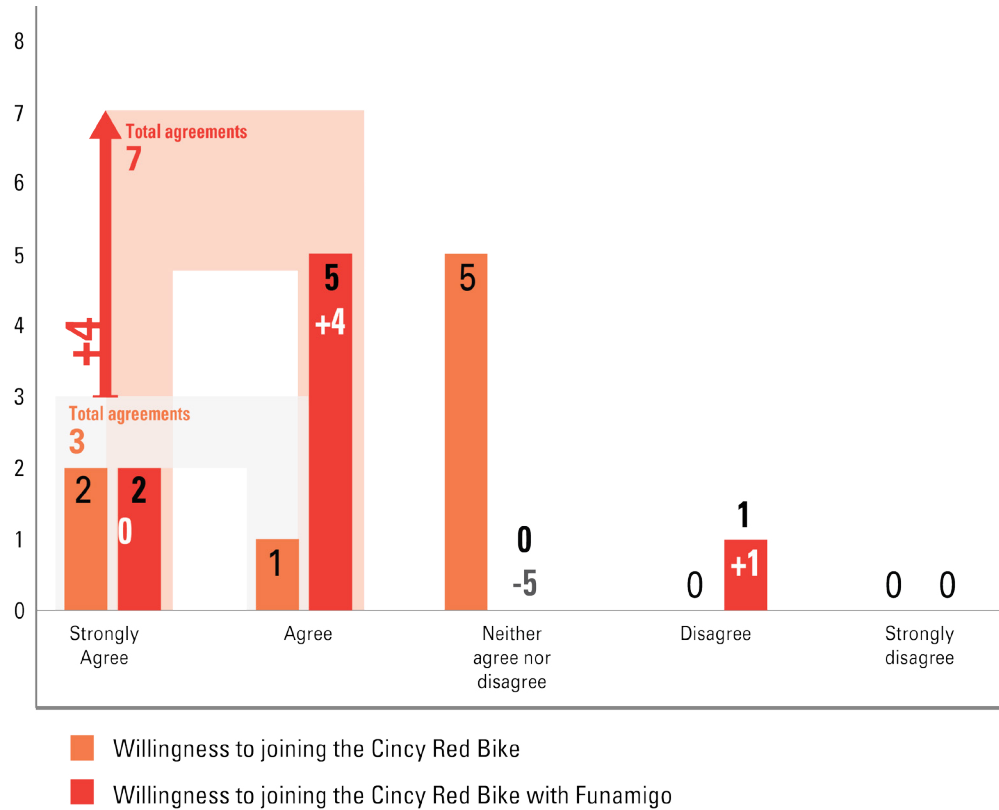
Figure 8-4.7. Results of question 8 if Funamigo experiences would enable UC students to keep having fun and pleasure while riding the Cincy Red Bike and motivates them to keep the membership

Appendix 8-5 Comparative Result Analysis

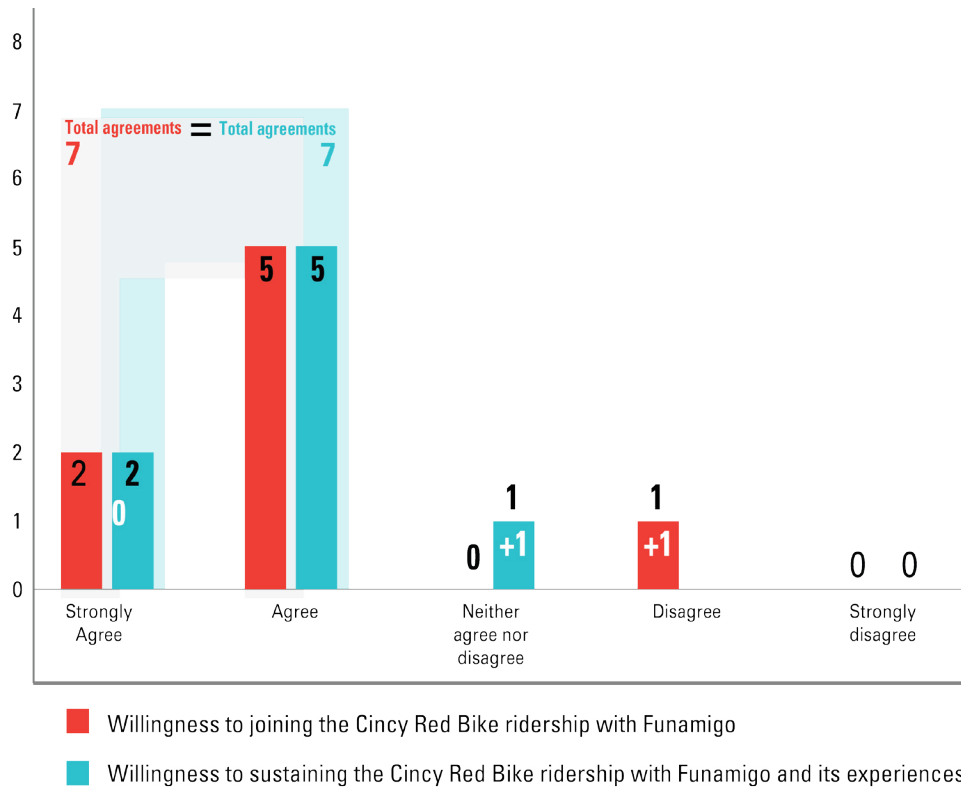
In comparison with the number of agreements of the question about fun emotion between riding the Bike with Funamigo and riding only the Bike, all of the participants agreed that riding the Bike with Funamigo is fun. This result got three more agreements than the result of riding only the Bike. Also, seven participants agreed that they would use and join the Cincy Red Bike service if Funamigo is available with four more agreements than the same question that asks their willingness to use the Bike. This result supported that fun improves a image of a service or a product in positive way.



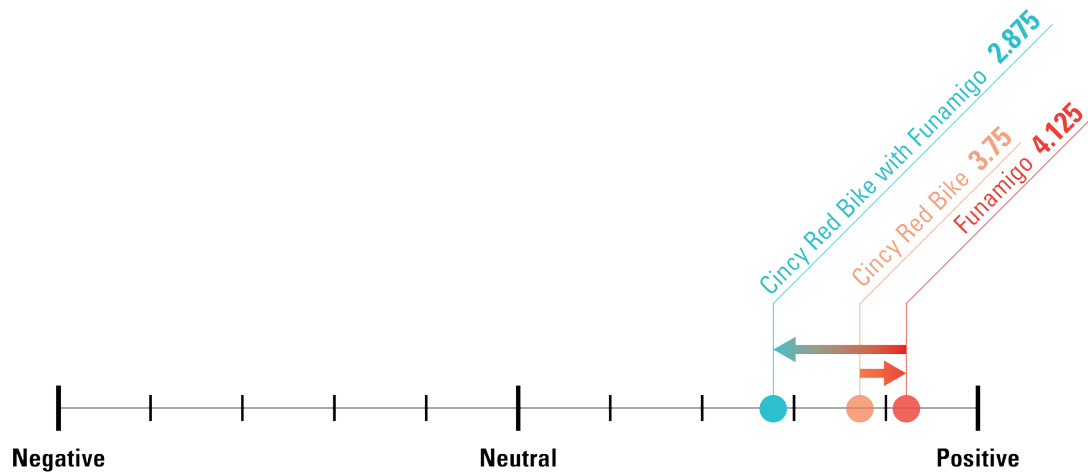
Appendix 8-5.1. A comparison of the number of agreements on fun emotion derived between from riding the bike without Funamigo and from riding only the Bike



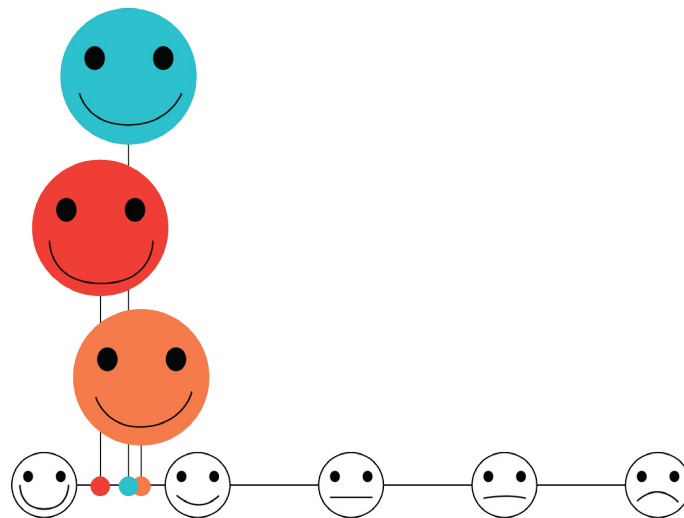
Appendix 8-5.2. A comparison of the number of agreements with between participants' willingness to use and join the Cincy Red Bike and their willingness to use and join the Cincy Red Bike if Funamigo is available



Appendix 8-5.3. A comparison of the number of agreements with between willingness to joining the Cincy Red Bike with Funamigo and willingness to sustaining the ridership with Funamigo and its experiences



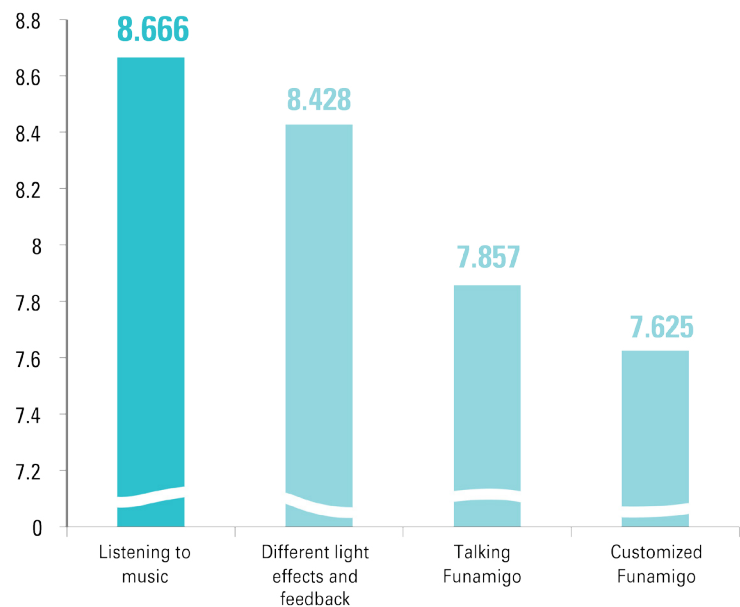
Appendix 8-5.4. A comparison of figures of positive emotions between the Cincy Red Bike, Funamigo and Cincy Red Bike with Funamigo and its experiences



- Average face expression evoked by the Cincy Red Bike
- Average face expression evoked by the Cincy Red Bike with Funamigo
- Average face expression evoked by the Cincy Red Bike with Funamigo and its experiences

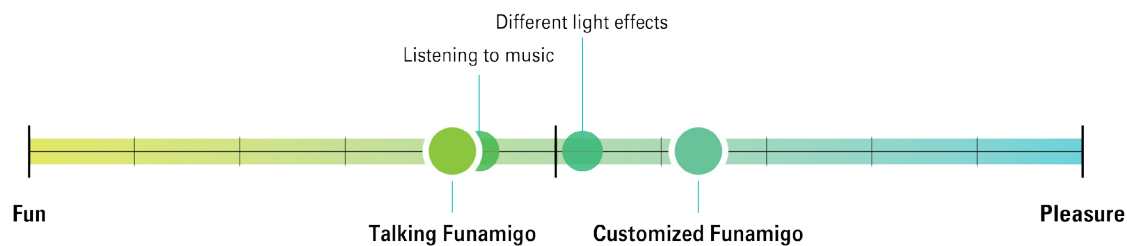
Appendix 8-5.5. A comparison of average face expressions between the same question of each section

All the four experiences got high rates, it turned out that listening to music with Funamigo made them have the most fun and pleasure.



Appendix 8-5.6. A comparison of rates of fun from each Funamigo experience

In the comparison that how each experience is closer either fun or pleasure, the function of Funamigo to talk to a user was the closest to fun and the function of customizing Funamigo was the closest to pleasure. This result supports a talking Funamigo attracted UC students’ attention in the enticement phase where fun is dominant works correctly. On the other hand, customizing Funamigo was for fun and pleasure in the engagement phase which fun transformed to pleasure. This result confirmed that experiences in this phase allow UC students to have long-term and deeper pleasure, as well as short and shallow fun.



Appendix 8-5.7. A comparison of each Funamigo experience on the scale from fun to pleasure